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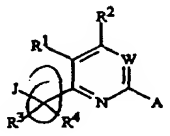
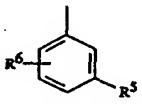
(54) Title: SUBSTITUTED PYRIMIDINE AND PYRIDINE HERBICIDES



(I)



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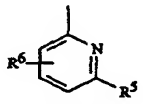

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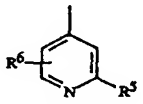

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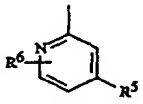

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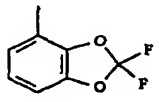

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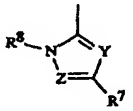
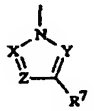


(J-6)



(J-7)

(57) Abstract

Compounds of formula (I), and their *N*–oxides and agriculturally suitable salts, are disclosed which are useful for controlling undesired vegetation, wherein J is (J–1), (J–2), (J–3), (J–4), (J–5), (J–6) or (J–7); and J, W, X, Y, Z, A, R^1–R^8 are as defined in the disclosure. Also disclosed are compositions containing the compounds of formula (I) and a method for controlling undesired vegetation which involves contacting the vegetation or its environment with an effective amount of a compound of formula (I).

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TITLE

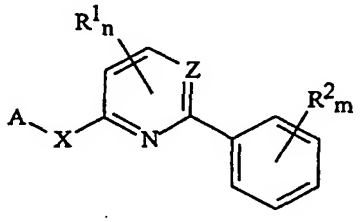
SUBSTITUTED PYRIMIDINE AND PYRIDINE HERBICIDES

BACKGROUND OF THE INVENTION

This invention relates to certain pyrimidines and pyridines, their *N*-oxides, agriculturally suitable salts, compositions thereof, and methods of their use for controlling undesirable vegetation.

The control of undesired vegetation is extremely important in achieving high crop efficiency. Achievement of selective control of the growth of weeds especially in such useful crops as rice, soybean, sugar beet, corn (maize), potato, wheat, barley, tomato and plantation crops, among others, is very desirable. Unchecked weed growth in such useful crops can cause significant reduction in productivity and thereby result in increased costs to the consumer. The control of undesired vegetation in noncrop areas is also important. Many products are commercially available for these purposes, but the need continues for new compounds which are more effective, less costly, less toxic, environmentally safer or have different modes of action.

EP 723,960 discloses herbicidal substituted pyrimidines and pyridines of Formula i:



i

wherein, *inter alia*,

A is an optionally substituted aryl or 5- or 6-membered nitrogen containing heteroaromatic group;

X is oxygen or sulfur;

Z is nitrogen or CH;

R^1 and R^2 are independently hydrogen, halogen, alkyl, haloalkyl, nitro or cyano;

n is 0, 1 or 2; and

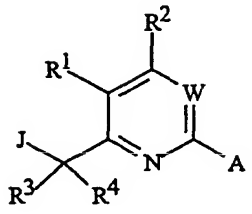
m is 0 to 5.

The pyrimidines and pyridines of the present invention are not disclosed in this reference.

SUMMARY OF THE INVENTION

This invention is directed to compounds of Formula I including all geometric and stereoisomers, *N*-oxides, and agriculturally suitable salts thereof, as well as agricultural

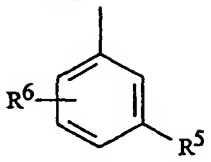
compositions containing them and a method of their use for controlling undesirable vegetation:



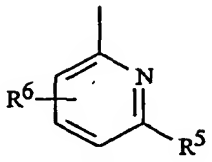
I

wherein

J is



J-1



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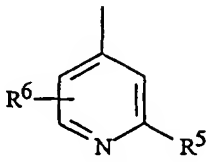

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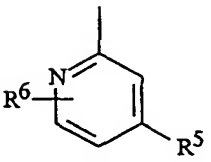
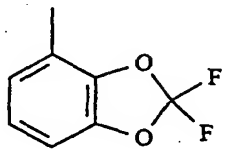
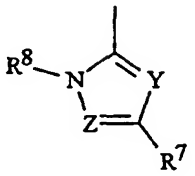


J-4

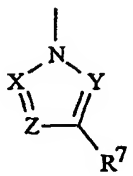


J-5



J-6

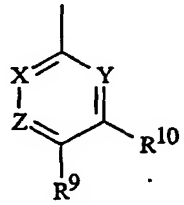
or



J-7

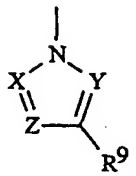
;

A is



A-1

or



A-2

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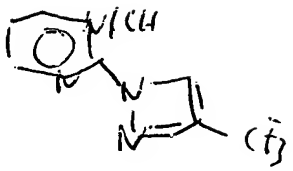


W is N or CR^{11};

X, Y and Z are independently N or CR^{12};

R^1 and R^2 are independently H, halogen, cyano, C_1-C_4 alkoxy, C_1-C_4 haloalkoxy, C_2-C_4 alkoxyalkyl, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_2-C_4 alkoxyalkyl, C_2-C_4 alkenyl, C_2-C_4 alkynyl, C_3-C_4 alkenyloxy, C_3-C_4 alkynyloxy, $S(O)_nR^{13}$, C_2-C_4

alkylthioalkyl, C_2-C_4 alkylsulfonylalkyl, C_1-C_4 alkylamino or C_2-C_4 dialkylamino;

R^3 is H, F, Cl, Br, cyano, C_1-C_4 alkyl, C_1-C_4 haloalkyl or CO_2R^{14};

R^4 is H, F, C_1-C_4 alkyl, OH or OR^{14};

R^3 and R^4 can be taken together with the carbon to which they are attached to form C(=O) or C(=NOR^{14});

R^5 is halogen, cyano, SF_5, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy, C_1-C_4 haloalkoxy or $S(O)_nR^{13}$;

R^6 and R^{10} are independently H, halogen, cyano, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy, C_1-C_4 haloalkoxy or $S(O)_nR^{13}$;

R^7 is halogen, cyano, SF_5, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy, C_1-C_4 haloalkoxy or $S(O)_nR^{13}$;

R^8 is C_1-C_4 alkyl or C_1-C_4 haloalkyl;

R^9 is H, halogen, cyano, SF_5, C_1-C_4 alkoxy, C_1-C_4 haloalkoxy, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_2-C_4 alkenyl, C_2-C_4 alkynyl, C_3-C_4 alkenyloxy, C_3-C_4 alkynyloxy or $S(O)_nR^{13}$;

R^{11} is H, halogen, cyano, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy, C_1-C_4 haloalkoxy or $S(O)_nR^{13}$;

R^{12} is H, halogen, cyano, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy, C_1-C_4 haloalkoxy or $S(O)_nR^{13}$;

each R^{13} is independently C_1-C_4 alkyl or C_1-C_4 haloalkyl;

each R^{14} is independently C_1-C_4 alkyl; and

each n is independently 0, 1 or 2.

In the above recitations, the term "alkyl", used either alone or in compound words such as "alkylthio" or "haloalkyl" includes straight-chain or branched alkyl, such as, methyl, ethyl, *n*-propyl, *i*-propyl, or the different butyl, pentyl or hexyl isomers. The term "1-2 alkyl" indicates that one or two of the available positions for that substituent may be alkyl which are independently selected. "Alkenyl" includes straight-chain or branched alkenes such as ethenyl, 1-propenyl, 2-propenyl, and the different butenyl, pentenyl and hexenyl isomers. "Alkenyl" also includes polyenes such as 1,2-propadienyl and 2,4-hexadienyl. "Alkynyl" includes straight-chain or branched alkynes such as ethynyl, 1-propynyl, 2-propynyl and the different butynyl, pentynyl and hexynyl isomers. "Alkynyl" can also include moieties comprised of multiple triple bonds such as 2,5-hexadiynyl. "Alkoxy" includes, for example, methoxy, ethoxy, *n*-propyloxy, isopropyloxy and the different butoxy, pentoxy and hexyloxy isomers. "Alkoxyalkyl" denotes alkoxy substitution on alkyl. Examples of "alkoxyalkyl" include CH_3OCH_2, $CH_3OCH_2CH_2$, $CH_3CH_2OCH_2$, $CH_3CH_2CH_2CH_2OCH_2$ and $CH_3CH_2OCH_2CH_2$. "Alkenyloxy" includes straight-chain or branched alkenyloxy moieties. Examples of "alkenyloxy" include H_2C=$CHCH_2O$,

$(CH_3)_2C=CHCH_2O$, $(CH_3)CH=CHCH_2O$, $(CH_3)CH=C(CH_3)CH_2O$ and $CH_2=CHCH_2CH_2O$. "Alkynyloxy" includes straight-chain or branched alkynyloxy moieties. Examples of "alkynyloxy" include $HC\equiv CCH_2O$, $CH_3C\equiv CCH_2O$ and $CH_3C\equiv CCH_2CH_2O$. "Alkylthio" includes branched or straight-chain alkylthio moieties such as methylthio, ethylthio, and the different propylthio, butylthio, pentylthio and hexylthio isomers. "Alkylthioalkyl" denotes alkylthio substitution on alkyl. Examples of "alkylthioalkyl" include CH_3SCH_2, $CH_3SCH_2CH_2$, $CH_3CH_2SCH_2$, $CH_3CH_2CH_2CH_2SCH_2$ and $CH_3CH_2SCH_2CH_2$. "Alkylsulfinyl" includes both enantiomers of an alkylsulfinyl group. Examples of "alkylsulfinyl" include $CH_3S(O)$, $CH_3CH_2S(O)$, $CH_3CH_2CH_2S(O)$, $(CH_3)_2CHS(O)$ and the different butylsulfinyl, pentylsulfinyl and hexylsulfinyl isomers. Examples of "alkylsulfonyl" include $CH_3S(O)_2$, $CH_3CH_2S(O)_2$, $CH_3CH_2CH_2S(O)_2$, $(CH_3)_2CHS(O)_2$ and the different butylsulfonyl, pentylsulfonyl and hexylsulfonyl isomers. "Alkylamino", "dialkylamino", "alkenylthio", "alkenylsulfinyl", "alkenylsulfonyl", "alkynylthio", "alkynylsulfinyl", "alkynylsulfonyl", and the like, are defined analogously to the above examples. One skilled in the art will appreciate that not all nitrogen containing heterocycles can form *N*-oxides since the nitrogen requires an available lone pair for oxidation to the oxide; one skilled in the art will recognize those nitrogen containing heterocycles which can form *N*-oxides. One skilled in the art will also recognize that tertiary amines can form *N*-oxides. Synthetic methods for the preparation of *N*-oxides of heterocycles and tertiary amines are very well known by one skilled in the art including the oxidation of heterocycles and tertiary amines with peroxy acids such as peracetic and *m*-chloroperbenzoic acid (MCPBA), hydrogen peroxide, alkyl hydroperoxides such as *t*-butyl hydroperoxide, sodium perborate, and dioxiranes such as dimethyldioxirane. These methods for the preparation of *N*-oxides have been extensively described and reviewed in the literature, see for example: T. L. Gilchrist in *Comprehensive Organic Synthesis*, vol. 7, pp 748-750, S. V. Ley, Ed., Pergamon Press; M. Tisler and B. Stanovnik in *Comprehensive Heterocyclic Chemistry*, vol. 3, pp 18-20, A. J. Boulton and A. McKillop, Eds., Pergamon Press; M. R. Grimmett and B. R. T. Keene in *Advances in Heterocyclic Chemistry*, vol. 43, pp 149-161, A. R. Katritzky, Ed., Academic Press; M. Tisler and B. Stanovnik in *Advances in Heterocyclic Chemistry*, vol. 9, pp 285-291, A. R. Katritzky and A. J. Boulton, Eds., Academic Press; and G. W. H. Cheeseman and E. S. G. Werstiuk in *Advances in Heterocyclic Chemistry*, vol. 22, pp 390-392, A. R. Katritzky and A. J. Boulton, Eds., Academic Press.

The term "halogen", either alone or in compound words such as "haloalkyl", includes fluorine, chlorine, bromine or iodine. The term "1-2 halogen" indicates that one or two of the available positions for that substituent may be halogen which are independently selected. Further, when used in compound words such as "haloalkyl", said alkyl may be partially or fully substituted with halogen atoms which may be the same or different. Examples of

"haloalkyl" include F_3C, $ClCH_2$, CF_3CH_2 and CF_3CCl_2. Examples of "haloalkoxy" include CF_3O, CCl_3CH_2O, $HCF_2CH_2CH_2O$ and CF_3CH_2O.

The total number of carbon atoms in a substituent group is indicated by the "C_i-C_j" prefix where i and j are numbers from 1 to 4. For example, C_1-C_3 alkylsulfonyl designates methylsulfonyl through propylsulfonyl; C_2 alkoxyalkyl designates CH_3OCH_2; C_3 alkoxyalkyl designates, for example, $CH_3CH(OCH_3)$, $CH_3OCH_2CH_2$ or $CH_3CH_2OCH_2$; and C_4 alkoxyalkyl designates the various isomers of an alkyl group substituted with an alkoxy group containing a total of four carbon atoms, examples including $CH_3CH_2CH_2OCH_2$ and $CH_3CH_2OCH_2CH_2$. Examples of "alkylcarbonyl" include $C(O)CH_3$, $C(O)CH_2CH_2CH_3$ and $C(O)CH(CH_3)_2$. Examples of "alkoxycarbonyl" include $CH_3OC(=O)$, $CH_3CH_2OC(=O)$, $CH_3CH_2CH_2OC(=O)$, $(CH_3)_2CHOC(=O)$ and the different butoxy- or pentoxycarbonyl isomers. In the above recitations, when a compound of Formula I is comprised of one or more heterocyclic rings, all substituents are attached to these rings through any available carbon or nitrogen by replacement of a hydrogen on said carbon or nitrogen.

When a group contains a substituent which can be hydrogen, for example R^9, then, when this substituent is taken as hydrogen, it is recognized that this is equivalent to said group being unsubstituted.

The compounds of this invention thus include compounds of Formula I, geometric and stereoisomers thereof, *N*-oxides thereof, and agriculturally suitable salts thereof. The compound of this invention can exist as one or more stereoisomers. The various stereoisomers include enantiomers, diastereomers, atropisomers and geometric isomers. One skilled in the art will appreciate that one stereoisomer may be more active and/or may exhibit beneficial effects when enriched relative to the other stereoisomer(s) or when separated from the other stereoisomer(s). Additionally, the skilled artisan knows how to separate, enrich, and/or to selectively prepare said stereoisomers. The compounds of the invention may be present as a mixture of stereoisomers, individual stereoisomers, or as an optically active form.

The salts of the compounds of the invention include acid-addition salts with inorganic or organic acids such as hydrobromic, hydrochloric, nitric, phosphoric, sulfuric, acetic, butyric, fumaric, lactic, maleic, malonic, oxalic, propionic, salicylic, tartaric, 4-toluenesulfonic or valeric acids.

Preferred compounds of the invention for reasons of better activity and/or ease of synthesis are:

Preferred 1. Compounds of Formula I above, geometric or stereoisomers thereof, *N*-oxides thereof and agriculturally-suitable salts thereof, wherein

R^1 and R^2 are independently H, C_1-C_4 alkyl or C_1-C_4 alkoxy;

R^5 and R^7 are independently halogen, C_1-C_4 haloalkyl, C_1-C_4 haloalkoxy or $S(O)_nR^{13}$;

R^6 is H or F;

R^8 is C_1-C_4 alkyl;

R^9 is halogen, cyano, C_1-C_4 alkoxy, C_1-C_4 haloalkoxy, C_1-C_4 alkyl, C_1-C_4 haloalkyl or $S(O)_nR^{13}$;

R^{10} is H, halogen, cyano or C_1-C_4 haloalkyl;

R^{11} is H, halogen, cyano or C_1-C_4 haloalkyl;

R^{12} is H, halogen, cyano or C_1-C_4 haloalkyl; and

n is 0.

Preferred 2. Compounds of Preferred 1 wherein

W is N;

R^5 and R^7 are independently C_1-C_4 haloalkyl or C_1-C_4 haloalkoxy; and

R^9 is halogen, C_1-C_4 haloalkoxy, C_1-C_4 haloalkyl or $S(O)_nR^{13}$.

Preferred 3. Compounds of Preferred 2 wherein

R^1 is C_1-C_4 alkyl or C_1-C_4 alkoxy;

R^2 is H;

R3 and R4 are independently H, F or methyl;

R^5 and R^7 are independently C_1-C_2 haloalkyl or C_1-C_2 haloalkoxy; and

R^9 is C_1-C_2 haloalkoxy, C_1-C_2 haloalkyl or $S(O)_nR^{13}$.

Preferred 4. Compounds of Preferred 3 wherein

J is J-1, J-5 or J-7.

Preferred 5. Compounds of Preferred 2 wherein

R^3 and R^4 can be taken together with the carbon to which they are attached to form C(=O).

Preferred 6. Compounds of Preferred 5 wherein

R^1 is C_1-C_4 alkyl or C_1-C_4 alkoxy;

R^2 is H;

R^5 and R^7 are independently C_1-C_2 haloalkyl or C_1-C_2 haloalkoxy; and

R^9 is C_1-C_2 haloalkoxy, C_1-C_2 haloalkyl or $S(O)_nR^{13}$.

Preferred 7. Compounds of Preferred 5 wherein

J is J-1 or J-5.

Most preferred is the compound of Formula I selected from the group consisting of:

(a) 5-ethyl-4-[[3-(trifluoromethoxy)phenyl]methyl]-2-[3-(trifluoromethyl)-1*H*-pyrazol-1-yl]pyrimidine;

(b) 5-ethyl-4-[[3-(trifluoromethyl)phenyl]methyl]-2-[3-(trifluoromethyl)-1*H*-pyrazol-1-yl]pyrimidine;

(c) 5-methyl-2-[4-(trifluoromethyl)phenyl]-4-[[3-(trifluoromethyl)phenyl]methyl]pyrimidine;

(d) 5-methyl-4-[[3-(trifluoromethoxy)phenyl]methyl]-2-[4-(trifluoromethyl)phenyl]pyrimidine;

(e) 5-methyl-4-[[3-(trifluoromethoxy)phenyl]methyl]-2-[3-(trifluoromethyl)-1*H*-pyrazol-1-yl]pyrimidine;

(f) [5-methyl-2-[4-(trifluoromethyl)phenyl]-4-pyrimidinyl][3-(trifluoromethyl)phenyl]methanone;

(g) [5-methyl-2-[3-(trifluoromethyl)-1*H*-pyrazol-1-yl]-4-pyrimidinyl][3-(trifluoromethyl)phenyl]methanone; and

(h) 5-methyl-4-[[3-(trifluoromethyl)phenyl]-2-[3-(trifluoromethyl)-1*H*-pyrazol-1-yl]pyrimidine.

This invention also relates to herbicidal compositions comprising herbicidally effective amounts of the compounds of the invention and at least one of a surfactant, a solid diluent or a liquid diluent. The preferred compositions of the present invention are those which comprise the above preferred compounds.

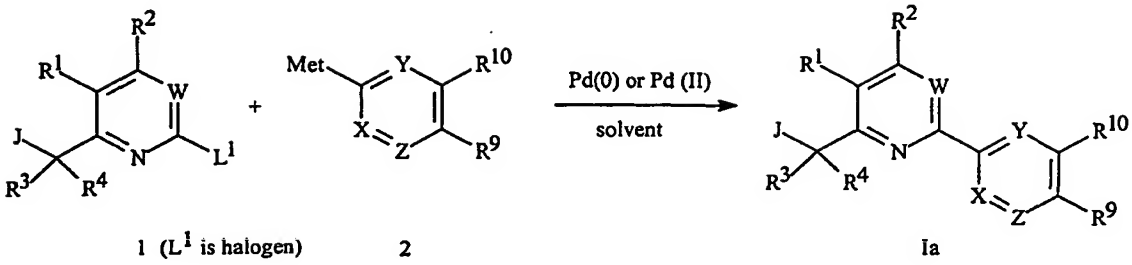
This invention also relates to a method for controlling undesired vegetation comprising applying to the locus of the vegetation herbicidally effective amounts of the compounds of the invention (e.g., as a composition described herein). The preferred methods of use are those involving the above preferred compounds.

DETAILS OF THE INVENTION

The compounds of Formula I can be prepared by one or more of the following methods and variations as described in Schemes 1-12. The definitions of J, A, W, X, Y, Z, R^1, R^2, R^3, R^4, R^9, R^{10}, and R^{14} in the compounds of Formulae 1-16 below are as defined above in the Summary of the Invention. Compounds of Formulae Ia-Ic are various subsets of the compounds of Formula I, and all substituents for Formulae Ia-Ic are as defined above for Formula I.

Scheme 1 illustrates the preparation of compounds of Formula Ia (Formula I wherein A is A-1). Substituted heterocycles of Formula 1 (where L^1 is halogen) can be coupled with metalated aryls or heteroaryls of Formula 2 (where Met is $Sn(alkyl)_3$, $B(OH)_2$ or $Zn(L^1)_2$) in the presence of a palladium(0) catalyst such as tetrakis(triphenylphosphine)palladium(0) or in the presence of a palladium(II) catalyst such as dichlorobis(triphenylphosphine)-palladium(II) to provide compounds of Formula Ia. Palladium(II) catalysts are generally used with a suitable base such as aqueous sodium bicarbonate or sodium carbonate. Suitable solvents for this coupling include *N,N*-dimethylformamide, dimethoxyethane, acetonitrile or tetrahydrofuran. Reaction temperatures range from 20 °C to 130 °C.

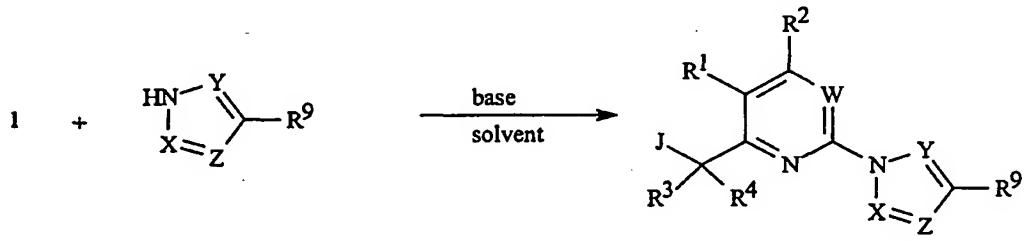
Scheme 1



1 (L^1 is halogen) 2 Ia

Scheme 2 illustrates the preparation of compounds of Formula Ib (Formula I wherein A is A-2). Substituted heterocycles of Formula 1 are allowed to react with substituted azoles of Formula 3 in the presence of a suitable base such as an alkali carbonate, alkali hydroxide, or alkali hydride in a solvent such as *N,N*-dimethylformamide, acetonitrile or tetrahydrofuran at temperatures ranging from 0 °C to 130 °C to provide compounds of Formula Ib.

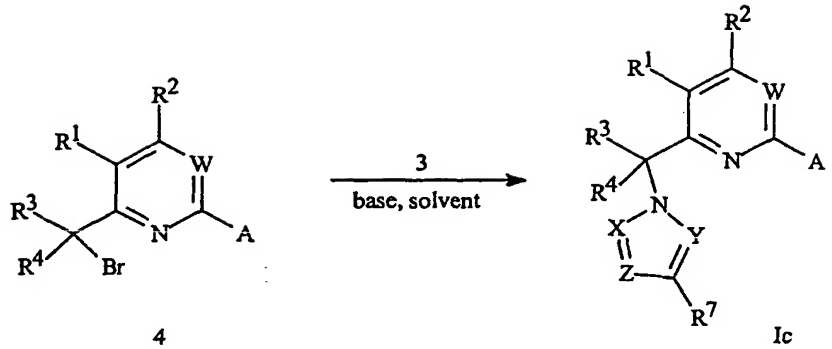
Scheme 2



3 Ib

Scheme 3 illustrates a method for preparing compounds of Formula Ic wherein J is an azole heterocycle of Formula J-7 and A is A-1 or A-2. Compounds of Formula 4 are allowed to react with an azole heterocycle of Formula 3 in a protic or aprotic solvent at temperatures ranging from 0 °C to 100 °C in the presence of a suitable base such an alkali carbonate, alkali hydroxide, or alkali hydride to provide compounds of Formula Ic. Particularly suitable are potassium carbonate as base and acetonitrile or *N,N*-dimethylformamide as solvent at a reaction temperature range of 20 °C to 80 °C.

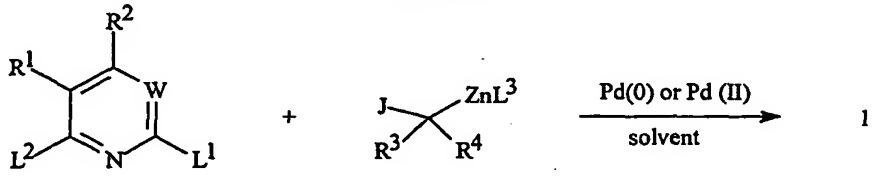
Scheme 3



4 Ic

Substituted pyrimidine intermediates of Formula 1 (wherein J is J-1 to J-6) can be prepared by the method shown in Scheme 4. By the synthetic protocol of Menta, E. and Oliva, A. *J. Heterocyclic Chem.* (1997), *34*, p 27, a dihalopyrimidine of Formula 5 (where L^1 and L^2 are halogen) is coupled with a substituted alkyl zinc reagent of Formula 6 (where L^3 is halogen) in the presence of a palladium(0) catalyst such as tetrakis(triphenylphosphine)palladium(0) or in the presence of a palladium(II) catalyst such as dichloro-bis(triphenylphosphine)palladium(II). Palladium(II) catalysts are generally used with a suitable base such as sodium bicarbonate or sodium carbonate. Suitable solvents for this coupling include *N,N*-dimethylformamide, dimethoxyethane, acetonitrile or tetrahydrofuran. Reaction temperatures range from 0 °C to 130 °C.

Scheme 4



5 6

Metalated aryls and heteroaryls of Formula 2 can be obtained commercially or can be prepared by methods known in the art: Sandosham, J. and Undheim, K. *Tetrahedron* (1994), *50*, pp 275-284; Undheim, K. and Benneche, T. *Acta Chemica Scandinavica* (1993), *47*, pp 102-121; *Advances in Heterocyclic Chemistry*; Katritzky, A.R., Ed.; Academic Press: New York, 1995; volume 62, pp 305-418.

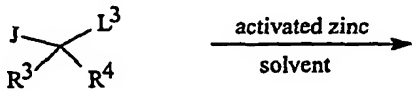
Azoles of Formula 3 can be obtained commercially or can be prepared by methods known in the art Elguero, J. et al., *Organic Preparations and Procedures Int.* (1995), *27*, pp 33-74; *Comprehensive Heterocyclic Chemistry*; Potts, K., Ed.; Pergamon Press: New York,

1984; volume 5, chapters 4.04 - 4.13; *Heterocyclic Compounds*; Elderfield, R., Ed.; John Wiley: New York, 1957; volume 5, chapters 2 and 4; Baldwin, J. et al. *J. Med. Chem.*, (1975), *18*, pp 895-900; Evans, J.J. et al. U.S. Patent 4,038,405.

Dihaloheterocycles of Formula 5 can be obtained commercially or can be readily prepared by known methods in the art; for example, see *Advances in Heterocyclic Chemistry*; Katritzky, A.R., Ed.; Academic Press: New York, 1993; volume 58, pp 301-305; *Heterocyclic Compounds*; Elderfield, R.C., Ed.; John Wiley: New York, 1957; volume 6, chapter 7, pp 265-270.

Zinc reagents of Formula 6 can be made by the method shown in Scheme 5. A substituted alkyl halide of Formula 7 (where L^3 is halogen) is allowed to react with activated zinc (see Jubert, C. and Knochel, P. *J. Org. Chem.* (1992), *57*, p 5425; Knochel, P. and Singer, R. D. *Chem. Rev.* (1993), *93*, p 2117) in a suitable solvent such as *N,N*-dimethylformamide, dimethoxyethane, acetonitrile or tetrahydrofuran. Reaction temperatures range from 0 °C to 130 °C.

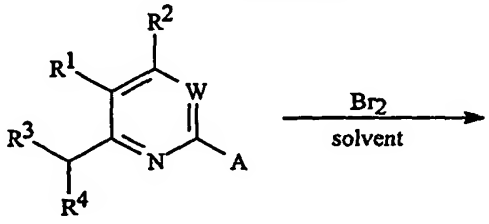
Scheme 5



7 6

As shown in Scheme 6, heterocyclic benzylic bromides of Formula 4 can be made by bromination of heterocycles of Formula 8 with bromine in an acidic solvent such as acetic acid at temperatures ranging from 20 °C to 100 °C (see, for example, Strekowski et al. *J. Org. Chem.* (1992), *56*, p 5610).

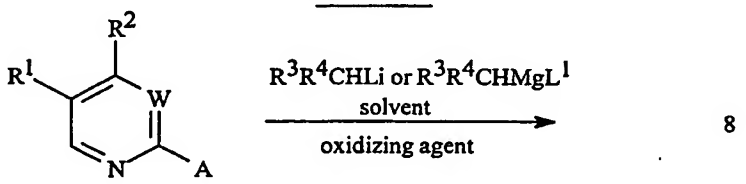
Scheme 6



8 4

Heterocycles of Formula 8 can be made from precursor heterocycles of Formula 9 as shown in Scheme 7. The addition of lithium or Grignard reagents of formula R^3R^4CHLi or $R^3R^4CHMgL^1$ to heterocycles of Formula 9 is carried out in ethereal solvents such as ether or tetrahydrofuran at temperatures ranging from -70 °C to 30 °C. The reaction mixture is worked up by the addition of water and an oxidizing agent. A particularly suitable oxidizing agent is dichlorodicyanoquinone (DDQ). See Strekowski et al. *J. Org. Chem.* (1992), *56*, p 5610 for examples of this synthetic method.

Scheme 7

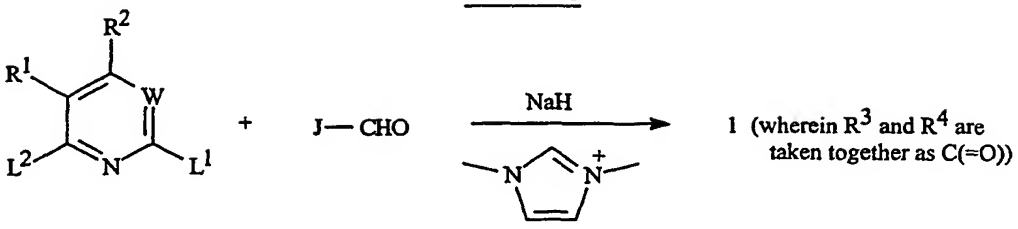


9 8

Heterocycles of Formula 9 can be prepared according to methods taught by Strekowski et al. *J. Org. Chem.* (1992), *56*, p 5610; Bredereck et. al., *Chem. Ber.* (1960), *93*, p 1208; Burdeska et al. *Helv. Chim. Acta* (1981), *64*, p 113; Undheim, K. and Benneche, T. *Advances in Heterocyclic Chemistry*; Katritzky, A. R., Ed.; Academic Press: New York, 1995, volume 62, pp 305-418; and *Comprehensive Heterocyclic Chemistry*; Boulton, A. J., and McKillop, A., Eds.; Pergamon Press: New York, 1984; volume 3, chapter 2.13. Lithium and Grignard reagents of formulae R^3R^4CHLi or $R^3R^4CHMgL^1$ are commercially available or can be prepared by methods well known in the art.

Compounds of Formula 1 (wherein R^3 and R^4 are taken together as C(=O)) can be prepared by the condensation of pyrimidines and pyridines of Formula 10 with aldehydes of Formula 11 in the presence of an imidazolium catalyst of Formula 12 as shown in Scheme 8. This reaction is carried out in the presence of a strong base such as an alkali hydride, preferably sodium hydride, in solvents such as dichloromethane, dioxane, tetrahydrofuran, benzene, toluene or other aprotic solvent. The reaction may be carried out at temperatures between 0 and 120 °C. A wide variety of azolium salts are known to catalyze this transformation; see, for example, Miyashita *Heterocycles*, (1996), *43*, 509-512 and references cited therein. A preferred catalyst is 1,3-dimethylimidazolium iodide.

Scheme 8

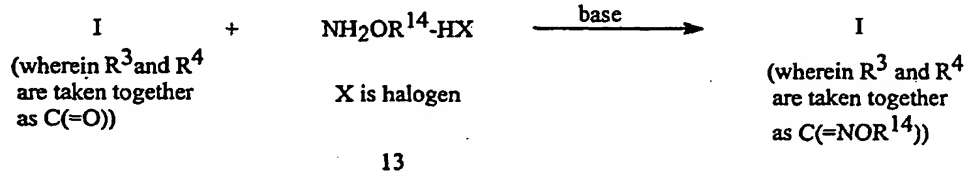


10 11 12

L^2 is halogen or alkylsulfonyl

Compounds of Formula I (wherein R^3 and R^4 are taken together as C(=NOR^{14})) can be formed directly from compounds of Formula I (wherein R^3 and R^4 are taken together as C(=O)) by the action of hydroxylamine or capped hydroxylamine salts of Formula 13 as shown in Scheme 9. Many hydroxylamines are commercially available as acid salts and are freed by the action of a base in the presence of the ketone of Formula I. Suitable bases include alkali carbonates, acetates, and hydroxides. These reactions are best carried out in protic solvents, such as lower alcohols, at temperatures between 0 and 120 °C. Especially preferred conditions use sodium carbonate or sodium acetate as base in ethanol at 70 to 80 °C.

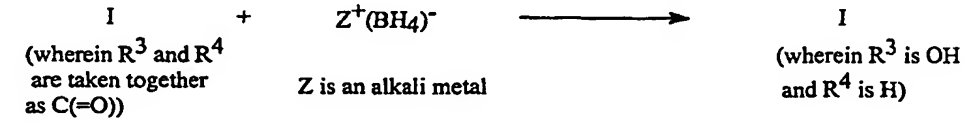
Scheme 9



13

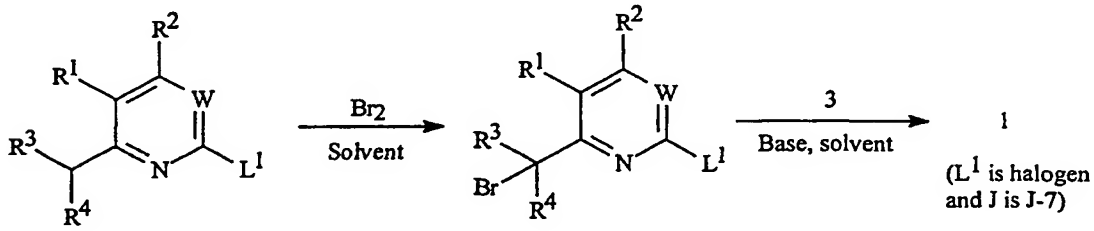
Compounds of Formula I (wherein R^3 is OH and R^4 is H) can be made by the reduction of ketones of Formula I (wherein R^3 and R^4 are taken together as C(=O)) as shown in Scheme 10. A wide variety of reduction conditions can be utilized, but for reasons of ease of use and selectivity, alkali borohydrides are preferred reductants. The reduction can be carried out at 0 to 100 °C in a variety of solvents which are inert to the action of borohydrides. Especially preferred conditions are the use of sodium borohydride in ethanol at 0 to 25 °C.

Scheme 10



As shown in Scheme 11, compounds of Formula 1 wherein J is J-7 can also be made via the bromination of compounds of Formula 14 with molecular bromine in an acidic solvent such as acetic acid at temperatures ranging from 20 to 100 °C in the same way as previously described in Scheme 6. The brominated products of Formula 15 can be displaced by heterocycles of Formula 3 in the presence of a base such as potassium carbonate as previously described for Scheme 2. Compounds of Formula 14 are known in the literature or are commercially available. See Benneche (*Acta Chemica Scandanavia*, 1997, *51*, 302) for preparation of these compounds from compounds of Formula 5.

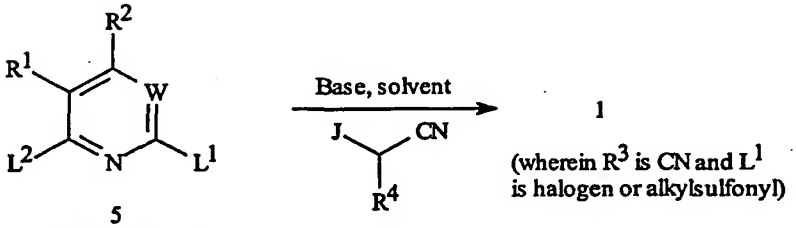
Scheme 11



14 15

Compounds of Formula 1 in which R^3 is cyano can be made as shown in Scheme 12. The reaction of acetonitrile derivatives of formula 16 with compounds of Formula 5 in the presence of a base gives compounds of formula 1 with a cyano group. The reaction can be carried out in a variety of solvents such as dimethylformamide, tetrahydrofuran, or other solvents inert to strong bases. A wide variety of bases which can deprotonate substituted acetonitriles can be used. Sodium hydride and potassium t-butoxide are preferred due to their ease of use and availability. The reaction can be carried out at temperatures ranging from 0 to 100 °C. Compounds of formula 16 are well known in the literature and many are commercially available

Scheme 12



5 (wherein W is N) 16

Compounds of Formula I substituted with the group $S(O)_nR^{13}$ wherein n is 1 or 2 can be prepared from compounds of Formula I substituted with said $S(O)_nR^{13}$ group wherein n is 0 by treatment with an oxidizing reagent such as *m*-chloroperoxybenzoic acid or Oxone (potassium peroxymonosulfate). This type of oxidation reaction is well known in the art; for

example, see March, J. *Advanced Organic Chemistry*; John Wiley: New York, 1992; 4th edition, pp 1201-1203.

It is recognized that some reagents and reaction conditions described above for preparing compounds of Formula I may not be compatible with certain functionalities present in the intermediates. In these instances, the incorporation of protection/deprotection sequences or functional group interconversions into the synthesis will aid in obtaining the desired products. The use and choice of the protecting groups will be apparent to one skilled in chemical synthesis (see, for example, Greene, T. W.; Wuts, P. G. M. *Protective Groups in Organic Synthesis*, 2nd ed.; Wiley: New York, 1991). One skilled in the art will recognize that, in some cases, after the introduction of a given reagent as it is depicted in any individual scheme, it may be necessary to perform additional routine synthetic steps not described in detail to complete the synthesis of compounds of Formula I. One skilled in the art will also recognize that it may be necessary to perform a combination of the steps illustrated in the above schemes in an order other than that implied by the particular sequence presented to prepare the compounds of Formula I.

One skilled in the art will also recognize that compounds of Formula I and the intermediates described herein can be subjected to various electrophilic, nucleophilic, radical, organometallic, oxidation, and reduction reactions to add substituents or modify existing substituents.

Without further elaboration, it is believed that one skilled in the art using the preceding description can utilize the present invention to its fullest extent. The following Examples are, therefore, to be construed as merely illustrative, and not limiting of the disclosure in any way whatsoever. Percentages are by weight except for chromatographic solvent mixtures or where otherwise indicated. Parts and percentages for chromatographic solvent mixtures are by volume unless otherwise indicated. ^{1}H NMR spectra are reported in ppm downfield from tetramethylsilane; s = singlet, d = doublet, t = triplet, q = quartet, m = multiplet, dd = doublet of doublets, dt = doublet of triplets, br s = broad singlet.

EXAMPLE 1

Step A: Preparation of 2-chloro-5-methyl-4-[[3-(trifluoromethyl)phenyl]methyl]pyrimidine

To a suspension of zinc dust (2.5 g, 38 mmol) stirred in 25 mL of tetrahydrofuran were added 2 drops of 1,2-dibromoethane and the mixture was heated to reflux. The suspension was then cooled and 2 drops of trimethylsilyl chloride were added followed by portionwise addition of 3-(trifluoromethyl)benzyl bromide (6.0 g, 25 mmol) with heating. When the reaction temperature reached 55 °C, a strong exotherm occurred and the reaction mixture was allowed to heat at reflux. The cooled reaction solution was decanted into a solution of 2,4-dichloro-5-methylpyrimidine (3.3 g, 20 mmol) and dichlorobis(triphenylphosphine)-palladium(II) (0.44 g, 0.63 mmol) stirring in 15 mL of tetrahydrofuran. Upon heating, the

reaction mixture exothermed strongly again at 55 °C and was then heated to reflux. The reaction mixture was allowed to cool and partitioned between diethyl ether and water. The organic layer was separated, washed with 1 N aqueous hydrochloric acid and brine, dried over magnesium chloride and concentrated under reduced pressure to give a crude oil. Purification by flash chromatography on silica gel (15 to 25% ethyl acetate in hexane) yielded 2.4 g of the title compound of Step A as an oil. ^{1}H NMR ($CDCl_3$): δ 8.35 (s, 1H), 7.60-7.35 (m, 4H), 4.15 (s, 2H), 2.25 (s, 3H).

Step B: Preparation of 5-methyl-2-[4-(trifluoromethyl)phenyl]-4-[[3-(trifluoromethyl)phenyl]methyl]pyrimidine

A stirred mixture of 4-(trifluoromethyl)benzene boronic acid (430 mg, 2.3 mmol), the title compound of Step A (500 mg, 1.7 mmol), dichlorobis(triphenylphosphine)palladium(II) (120 mg, 0.17 mmol) and sodium carbonate (550 mg, 5.2 mmol) in a mixture of 6 mL of water and 2 mL of tetrahydrofuran was heated at reflux for 1.5 h. The reaction mixture was then partitioned between diethyl ether and water. The organic layer was separated, washed with brine, dried over magnesium sulfate and concentrated under reduced pressure. Flash chromatography on silica gel (20 to 25% ethyl acetate in hexane) followed by trituration with 10% diethyl ether in hexane afforded 350 mg of the title compound of Step B, a compound of this invention, as a yellow-tinted solid melting at 112-113 °C. ^{1}H NMR ($CDCl_3$): δ 8.55 (m, 3H), 7.70 (d, 2H), 7.60 (s, 1H), 7.55-7.40 (m, 3H), 4.25 (s, 2H), 2.30 (s, 3H).

EXAMPLE 2

Step A: Preparation of 5-methyl-4-[[3-(trifluoromethyl)phenyl]methyl]-2-[3-(trifluoromethyl)-1*H*-pyrazol-1-yl]pyrimidine

A stirred mixture of 3-(trifluoromethyl)pyrazole (390 mg, 2.9 mmol), the title compound of Step A in Example 1 (750 mg, 2.6 mmol), and powdered potassium carbonate (1.1 g, 7.9 mmol) in 10 mL of *N,N*-dimethylformamide was heated at 60 °C for 3 h followed by heating at 80 °C for 1 h. The reaction mixture was then partitioned between diethyl ether and water. The organic layer was separated, washed with brine, dried over magnesium sulfate and concentrated under reduced pressure. Column chromatography on silica gel (5% diethyl ether in 1-chlorobutane) afforded 210 mg of the title compound of Step A as an oil which solidified to a white solid melting at 90-92 °C. ^{1}H NMR ($CDCl_3$): δ 8.55 (t,2H), 7.55-7.50 (m, 2H), 7.45-7.40 (m, 2H), 6.72 (d, 1H), 4.26 (s, 2H), 2.32 (s, 3H).

EXAMPLE 3

Step A: Preparation of 5-methyl-2-(4-trifluoromethylphenyl)pyrimidine

A sample of 4-trifluoromethylbenzamidine hydrochloride dihydrate (Maybridge, 15.2 g, 58 mmol) was dissolved in 100 mL of methanol and 3-ethoxy-2-methylacrolein (Janssen, 7.8 g, 64 mmol) was added. Sodium methoxide (25% solution in methanol, 14.7 mL) was added and the mixture was heated at 50 °C for 3 h. The cooled reaction mixture was then added to 500 ml of ice water and stirred for 30 minutes. The white solid was filtered, air

dried, dissolved in 300 mL of dichloromethane and dried over magnesium sulfate. The solvent was removed under reduced pressure to yield, after trituration with hexanes, 12.5 g of the product as a white solid melting at 143-146 °C. ^{1}H NMR ($CDCl_3$): δ 2.37 (s, 3H), 7.73 (d, 2H), 8.53 (d, 2H), 8.66 (s, 2H).

Step B: Preparation of 4,5-dimethyl-2-(4-trifluoromethylphenyl)pyrimidine

The title compound of Step A (9.0 g, 38 mmol) was dissolved in 50 mL of tetrahydrofuran and treated with methyl lithium (1.4 M in ether, 34 mL, 47 mmol) at a temperature of -70 °C. The reaction mixture exothermed to -35 °C. The mixture was stirred at -30 °C for 1.5 h and then treated with 1 mL of water and dichlorodicyanoquinone (9.44 g, 42 mmol). The mixture was stirred at 25 °C for 30 minutes and then partitioned twice between 100 mL of water and 100 mL of dichloromethane. The combined organics were washed with brine and dried over magnesium sulfate. The residue after evaporation was subjected to silica gel chromatography using hexanes/ethyl acetate (95:5) as eluent to give 9.02 g of the title compound of Step B as a white solid melting at 128-131 °C. ^{1}H NMR ($CDCl_3$): δ 2.31 (s, 3H), 2.56 (s, 3H), 7.71 (d, 2H), 8.49 (d, 2H), 8.53 (s, 1H).

Step C: Preparation of 4-bromomethyl-5-methyl-2-(4-trifluoromethylphenyl)pyrimidine

The title compound of Step B (2.0 g, 8 mmol) was dissolved in 10 mL of acetic acid and treated with bromine (0.4 mL, 8 mmol). The mixture was heated at 80 °C until the orange color was discharged (1 h). The mixture was evaporated under reduced pressure, diluted with 50 mL of ether and washed twice with 50 mL of sodium bicarbonate and then 50 mL of brine. The organic layer was dried over magnesium sulfate and concentrated under reduced pressure to yield 2.54 g of the title compound of Step C as a tan solid which was used immediately in the next step without further purification. ^{1}H NMR ($CDCl_3$): δ 2.44 (s, 3H), 4.54 (s, 2H), 7.74 (d, 2H), 8.56 (d, 2H), 8.62 (s, 1H).

Step D: Preparation of 5-methyl-2-(4-trifluoromethylphenyl)-4-[3-(trifluoromethyl)-1*H*-pyrazol-1-yl]methylpyrimidine

The title compound of Step C (0.7 g, 2 mmol), 3-trifluoromethylpyrazole (0.27 g, 2 mmol) and potassium carbonate (0.83 g, 6 mmol) were suspended in 10 mL of acetonitrile and heated to reflux for 1 h. The salts were filtered and the acetonitrile was removed under reduced pressure. The residue was purified by chromatography on silica gel eluting with hexanes/ethyl acetate (85:15) to afford 0.52 g of the title compound of Step D, a compound of this invention, as a white solid melting at 112-114 °C. ^{1}H NMR ($CDCl_3$): δ 2.39 (s, 3H), 5.53 (s, 2H), 6.62 (d, 1H), 7.6-7.8 (m, 3H), 8.44 (d, 2H), 8.6 (s, 1H).

EXAMPLE 4

Step A: Preparation of (2-chloro-5-methyl-4-pyrimidinyl)[3-(trifluoromethyl)phenyl]methanone

2,4-Dichloro-5-methylpyrimidine (3.6 g, 18.4 mmol) was dissolved in dichloromethane (50 mL) and treated sequentially with 3-trifluoromethylbenzaldehyde (3.3 g, 18.4 mmol), and 1,3-dimethylimidazolium iodide (1.37 g, 6.2 mmol). Sodium hydride (0.74 g, 18.4 mmol) was added and an exotherm was noted. After being heated at reflux for 3h, the reaction was quenched with water and the layers were separated. The dried (magnesium sulfate) organic layer was purified by chromatography on silica gel using hexanes/ethyl acetate 85:15 as eluent. The title compound of Step A (1.8 g) was isolated as a white solid melting at 113-116 °C. ^{1}H NMR ($CDCl_3$/200 MHz) 2.39 (s, 3H), 7.66 (m, 1H), 7.90 (d, 1H), 8.07 (s,1H), 8.69 (s, 1H).

Step B: Preparation of [5-methyl-2-[3-(trifluoromethyl)-1*H*-pyrazol-1-yl]-4-pyrimidinyl][3-(trifluoromethyl)phenyl]methanone

The title compound of Step A (0.6 g, 2 mmol), 3-trifluoromethylpyrazole (0.25 g), and potassium carbonate (0.8 g, 6 mmol) were suspended in acetonitrile (15 mL) and heated at reflux for 3 h. The cooled reaction mixture was filtered and the cake washed with acetonitrile. After evaporation of the solvent under reduced pressure, the residue was subjected to silica gel chromatography using hexanes/ethyl acetate (85:15) to give 0.12 g of the title compound of Step B, a compound of the invention, as a white solid. ^{1}H NMR ($CDCl_3$/200 MHz) 2.45 (s, 3H), 6.75 (d, 1H), 7.67 (d, 1H), 7.92 (d, 1H), 8.10 (s, 1H), 8.27 (s, 1H), 8.54 (d, 1H), 8.9 (s, 1H).

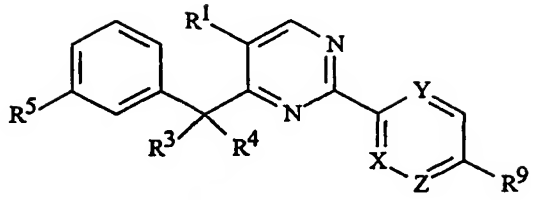
EXAMPLE 5

Step A: Preparation of [5-methyl-2-[4-(trifluoromethyl)phenyl]-4-pyrimidinyl][3-(trifluoromethyl)phenyl]methanone

The title compound of Example 1, Step A (0.6 g, 2 mmol), 4-trifluoromethylbenzeneboronic acid (1.1 g, 6 mmol), and bis(triphenylphosphine)palladium dichloride were dissolved in dimethoxyethane (15 mL) and aqueous sodium carbonate (2 M, 4 mmol). The resulting mixture was heated at 80 °C for 3 h. The mixture was diluted with dichloromethane (50 mL) and water (50 mL). The dichloromethane layer was dried over magnesium sulfate, concentrated under reduced pressure, and the residue was subjected to silica gel chromatography using hexanes/ethyl acetate (85:15). The title compound of Step A, a compound of the invention, was isolated as a white solid (0.56 g) melting at 159-161 °C. ^{1}H NMR ($CDCl_3$/200 MHz) 2.47 (s, 3H), 7.62-7.78 (m, 3H), 7.94 (d, 1H), 8.17 (d, 1H), 8.34 (s, 1H), 8.5 (d, 2H), 8.9 (s, 1H).

By the procedures described herein together with methods known in the art, the following compounds of Tables 1 to 34 can be prepared.

Table 1



R^3 is H; X, Y and Z are CH

R^1	R^4	R^5	R^9	R^1	R^4	R^5	R^9
H	H	CF_3	CF_3	H	H	OCF_3	CF_3
H	H	CF_3	OCF_3	H	H	OCF_3	OCF_3
H	H	CF_3	SCF_3	H	H	OCF_3	SCF_3
H	H	CF_3	$OCHF_2$	H	H	OCF_3	$OCHF_2$
H	H	CF_3	$SCHF_2$	H	H	OCF_3	$SCHF_2$
H	H	CF_3	C_2F_5	H	H	OCF_3	C_2F_5
H	H	CF_3	Cl	H	H	OCF_3	Cl
H	H	CF_3	SCH_2CH_3	H	H	OCF_3	SCH_2CH_3
H	H	$OCHF_2$	CF_3	H	H	SCF_3	CF_3
H	H	$OCHF_2$	OCF_3	H	H	SCF_3	OCF_3
H	H	$OCHF_2$	SCF_3	H	H	SCF_3	SCF_3
H	H	$OCHF_2$	$OCHF_2$	H	H	SCF_3	$OCHF_2$
H	H	$OCHF_2$	$SCHF_2$	H	H	SCF_3	$SCHF_2$
H	H	$OCHF_2$	C_2F_5	H	H	SCF_3	C_2F_5
H	H	$OCHF_2$	Cl	H	H	SCF_3	Cl
H	H	$OCHF_2$	SCH_2CH_3	H	H	SCF_3	SCH_2CH_3
H	H	$SCHF_2$	CF_3	H	H	Cl	CF_3
H	H	$SCHF_2$	OCF_3	H	H	Cl	OCF_3
H	H	$SCHF_2$	SCF_3	H	H	Cl	SCF_3
H	H	$SCHF_2$	$OCHF_2$	H	H	Cl	$OCHF_2$
H	H	$SCHF_2$	$SCHF_2$	H	H	Cl	$SCHF_2$
H	H	$SCHF_2$	C_2F_5	H	H	Cl	C_2F_5
H	H	$SCHF_2$	Cl	H	H	Cl	Cl
H	H	$SCHF_2$	SCH_2CH_3	H	H	Cl	SCH_2CH_3
H	CH_3	CF_3	CF_3	H	CH_3	OCF_3	CF_3
H	CH_3	CF_3	OCF_3	H	CH_3	OCF_3	OCF_3
H	CH_3	CF_3	SCF_3	H	CH_3	OCF_3	SCF_3
H	CH_3	CF_3	$OCHF_2$	H	CH_3	OCF_3	$OCHF_2$
H	CH_3	CF_3	$SCHF_2$	H	CH_3	OCF_3	$SCHF_2$
H	CH_3	CF_3	C_2F_5	H	CH_3	OCF_3	C_2F_5

H	CH_3	CF_3	Cl	H	CH_3	OCF_3	Cl
H	CH_3	CF_3	SCH_2CH_3	H	CH_3	OCF_3	SCH_2CH_3
H	CH_3	$OCHF_2$	CF_3	H	CH_3	SCF_3	CF_3
H	CH_3	$OCHF_2$	OCF_3	H	CH_3	SCF_3	OCF_3
H	CH_3	$OCHF_2$	SCF_3	H	CH_3	SCF_3	SCF_3
H	CH_3	$OCHF_2$	$OCHF_2$	H	CH_3	SCF_3	$OCHF_2$
H	CH_3	$OCHF_2$	$SCHF_2$	H	CH_3	SCF_3	$SCHF_2$
H	CH_3	$OCHF_2$	C_2F_5	H	CH_3	SCF_3	C_2F_5
H	CH_3	$OCHF_2$	Cl	H	CH_3	SCF_3	Cl
H	CH_3	$OCHF_2$	SCH_2CH_3	H	CH_3	SCF_3	SCH_2CH_3
H	CH_3	$SCHF_2$	CF_3	H	CH_3	Cl	CF_3
H	CH_3	$SCHF_2$	OCF_3	H	CH_3	Cl	OCF_3
H	CH_3	$SCHF_2$	SCF_3	H	CH_3	Cl	SCF_3
H	CH_3	$SCHF_2$	$OCHF_2$	H	CH_3	Cl	$OCHF_2$
H	CH_3	$SCHF_2$	$SCHF_2$	H	CH_3	Cl	$SCHF_2$
H	CH_3	$SCHF_2$	C_2F_5	H	CH_3	Cl	C_2F_5
H	CH_3	$SCHF_2$	Cl	H	CH_3	Cl	Cl
H	CH_3	$SCHF_2$	SCH_2CH_3	H	CH_3	Cl	SCH_2CH_3
H	F	CF_3	CF_3	H	F	OCF_3	CF_3
H	F	CF_3	OCF_3	H	F	OCF_3	OCF_3
H	F	CF_3	SCF_3	H	F	OCF_3	SCF_3
H	F	CF_3	$OCHF_2$	H	F	OCF_3	$OCHF_2$
H	F	CF_3	$SCHF_2$	H	F	OCF_3	$SCHF_2$
H	F	CF_3	C_2F_5	H	F	OCF_3	C_2F_5
H	F	CF_3	Cl	H	F	OCF_3	Cl
H	F	CF_3	SCH_2CH_3	H	F	OCF_3	SCH_2CH_3
H	F	$OCHF_2$	CF_3	H	F	SCF_3	CF_3
H	F	$OCHF_2$	OCF_3	H	F	SCF_3	OCF_3
H	F	$OCHF_2$	SCF_3	H	F	SCF_3	SCF_3
H	F	$OCHF_2$	$OCHF_2$	H	F	SCF_3	$OCHF_2$
H	F	$OCHF_2$	$SCHF_2$	H	F	SCF_3	$SCHF_2$
H	F	$OCHF_2$	C_2F_5	H	F	SCF_3	C_2F_5
H	F	$OCHF_2$	Cl	H	F	SCF_3	Cl
H	F	$OCHF_2$	SCH_2CH_3	H	F	SCF_3	SCH_2CH_3
H	F	$SCHF_2$	CF_3	H	F	Cl	CF_3
H	F	$SCHF_2$	OCF_3	H	F	Cl	OCF_3
H	F	$SCHF_2$	SCF_3	H	F	Cl	SCF_3
H	F	$SCHF_2$	$OCHF_2$	H	F	Cl	$OCHF_2$

H	F	$SCHF_2$	$SCHF_2$	H	F	Cl	$SCHF_2$
H	F	$SCHF_2$	C_2F_5	H	F	Cl	C_2F_5
H	F	$SCHF_2$	Cl	H	F	Cl	Cl
H	F	$SCHF_2$	SCH_2CH_3	H	F	Cl	SCH_2CH_3
H	Cl	CF_3	CF_3	H	Cl	OCF_3	CF_3
H	Cl	CF_3	OCF_3	H	Cl	OCF_3	OCF_3
H	Cl	CF_3	SCF_3	H	Cl	OCF_3	SCF_3
H	Cl	CF_3	$OCHF_2$	H	Cl	OCF_3	$OCHF_2$
H	Cl	CF_3	$SCHF_2$	H	Cl	OCF_3	$SCHF_2$
H	Cl	CF_3	C_2F_5	H	Cl	OCF_3	C_2F_5
H	Cl	CF_3	Cl	H	Cl	OCF_3	Cl
H	Cl	CF_3	SCH_2CH_3	H	Cl	OCF_3	SCH_2CH_3
H	Cl	$OCHF_2$	CF_3	H	Cl	SCF_3	CF_3
H	Cl	$OCHF_2$	OCF_3	H	Cl	SCF_3	OCF_3
H	Cl	$OCHF_2$	SCF_3	H	Cl	SCF_3	SCF_3
H	Cl	$OCHF_2$	$OCHF_2$	H	Cl	SCF_3	$OCHF_2$
H	Cl	$OCHF_2$	$SCHF_2$	H	Cl	SCF_3	$SCHF_2$
H	Cl	$OCHF_2$	C_2F_5	H	Cl	SCF_3	C_2F_5
H	Cl	$OCHF_2$	Cl	H	Cl	SCF_3	Cl
H	Cl	$OCHF_2$	SCH_2CH_3	H	Cl	SCF_3	SCH_2CH_3
H	Cl	$SCHF_2$	CF_3	H	Cl	Cl	CF_3
H	Cl	$SCHF_2$	OCF_3	H	Cl	Cl	OCF_3
H	Cl	$SCHF_2$	SCF_3	H	Cl	Cl	SCF_3
H	Cl	$SCHF_2$	$OCHF_2$	H	Cl	Cl	$OCHF_2$
H	Cl	$SCHF_2$	$SCHF_2$	H	Cl	Cl	$SCHF_2$
H	Cl	$SCHF_2$	C_2F_5	H	Cl	Cl	C_2F_5
H	Cl	$SCHF_2$	Cl	H	Cl	Cl	Cl
H	Cl	$SCHF_2$	SCH_2CH_3	H	Cl	Cl	SCH_2CH_3
CH_3	H	CF_3	CF_3	CH_3	H	OCF_3	CF_3
CH_3	H	CF_3	OCF_3	CH_3	H	OCF_3	OCF_3
CH_3	H	CF_3	SCF_3	CH_3	H	OCF_3	SCF_3
CH_3	H	CF_3	$OCHF_2$	CH_3	H	OCF_3	$OCHF_2$
CH_3	H	CF_3	$SCHF_2$	CH_3	H	OCF_3	$SCHF_2$
CH_3	H	CF_3	C_2F_5	CH_3	H	OCF_3	C_2F_5
CH_3	H	CF_3	Cl	CH_3	H	OCF_3	Cl
CH_3	H	CF_3	SCH_2CH_3	CH_3	H	OCF_3	SCH_2CH_3
CH_3	H	$OCHF_2$	CF_3	CH_3	H	SCF_3	CF_3
CH_3	H	$OCHF_2$	OCF_3	CH_3	H	SCF_3	OCF_3

CH_3	H	$OCHF_2$	SCF_3	CH_3	H	SCF_3	SCF_3
CH_3	H	$OCHF_2$	$OCHF_2$	CH_3	H	SCF_3	$OCHF_2$
CH_3	H	$OCHF_2$	$SCHF_2$	CH_3	H	SCF_3	$SCHF_2$
CH_3	H	$OCHF_2$	C_2F_5	CH_3	H	SCF_3	C_2F_5
CH_3	H	$OCHF_2$	Cl	CH_3	H	SCF_3	Cl
CH_3	H	$OCHF_2$	SCH_2CH_3	CH_3	H	SCF_3	SCH_2CH_3
CH_3	H	$SCHF_2$	CF_3	CH_3	H	Cl	CF_3
CH_3	H	$SCHF_2$	OCF_3	CH_3	H	Cl	OCF_3
CH_3	H	$SCHF_2$	SCF_3	CH_3	H	Cl	SCF_3
CH_3	H	$SCHF_2$	$OCHF_2$	CH_3	H	Cl	$OCHF_2$
CH_3	H	$SCHF_2$	$SCHF_2$	CH_3	H	Cl	$SCHF_2$
CH_3	H	$SCHF_2$	C_2F_5	CH_3	H	Cl	C_2F_5
CH_3	H	$SCHF_2$	Cl	CH_3	H	Cl	Cl
CH_3	H	$SCHF_2$	SCH_2CH_3	CH_3	H	Cl	SCH_2CH_3
CH_3	CH_3	CF_3	CF_3	CH_3	CH_3	OCF_3	CF_3
CH_3	CH_3	CF_3	OCF_3	CH_3	CH_3	OCF_3	OCF_3
CH_3	CH_3	CF_3	SCF_3	CH_3	CH_3	OCF_3	SCF_3
CH_3	CH_3	CF_3	$OCHF_2$	CH_3	CH_3	OCF_3	$OCHF_2$
CH_3	CH_3	CF_3	$SCHF_2$	CH_3	CH_3	OCF_3	$SCHF_2$
CH_3	CH_3	CF_3	C_2F_5	CH_3	CH_3	OCF_3	C_2F_5
CH_3	CH_3	CF_3	Cl	CH_3	CH_3	OCF_3	Cl
CH_3	CH_3	CF_3	SCH_2CH_3	CH_3	CH_3	OCF_3	SCH_2CH_3
CH_3	CH_3	$OCHF_2$	CF_3	CH_3	CH_3	SCF_3	CF_3
CH_3	CH_3	$OCHF_2$	OCF_3	CH_3	CH_3	SCF_3	OCF_3
CH_3	CH_3	$OCHF_2$	SCF_3	CH_3	CH_3	SCF_3	SCF_3
CH_3	CH_3	$OCHF_2$	$OCHF_2$	CH_3	CH_3	SCF_3	$OCHF_2$
CH_3	CH_3	$OCHF_2$	$SCHF_2$	CH_3	CH_3	SCF_3	$SCHF_2$
CH_3	CH_3	$OCHF_2$	C_2F_5	CH_3	CH_3	SCF_3	C_2F_5
CH_3	CH_3	$OCHF_2$	Cl	CH_3	CH_3	SCF_3	Cl
CH_3	CH_3	$OCHF_2$	SCH_2CH_3	CH_3	CH_3	SCF_3	SCH_2CH_3
CH_3	CH_3	$SCHF_2$	CF_3	CH_3	CH_3	Cl	CF_3
CH_3	CH_3	$SCHF_2$	OCF_3	CH_3	CH_3	Cl	OCF_3
CH_3	CH_3	$SCHF_2$	SCF_3	CH_3	CH_3	Cl	SCF_3
CH_3	CH_3	$SCHF_2$	$OCHF_2$	CH_3	CH_3	Cl	$OCHF_2$
CH_3	CH_3	$SCHF_2$	$SCHF_2$	CH_3	CH_3	Cl	$SCHF_2$
CH_3	CH_3	$SCHF_2$	C_2F_5	CH_3	CH_3	Cl	C_2F_5
CH_3	CH_3	$SCHF_2$	Cl	CH_3	CH_3	Cl	Cl
CH_3	CH_3	$SCHF_2$	SCH_2CH_3	CH_3	CH_3	Cl	SCH_2CH_3

CH_3	F	CF_3	CF_3	CH_3	F	OCF_3	CF_3
CH_3	F	CF_3	OCF_3	CH_3	F	OCF_3	OCF_3
CH_3	F	CF_3	SCF_3	CH_3	F	OCF_3	SCF_3
CH_3	F	CF_3	$OCHF_2$	CH_3	F	OCF_3	$OCHF_2$
CH_3	F	CF_3	$SCHF_2$	CH_3	F	OCF_3	$SCHF_2$
CH_3	F	CF_3	C_2F_5	CH_3	F	OCF_3	C_2F_5
CH_3	F	CF_3	Cl	CH_3	F	OCF_3	Cl
CH_3	F	CF_3	SCH_2CH_3	CH_3	F	OCF_3	SCH_2CH_3
CH_3	F	$OCHF_2$	CF_3	CH_3	F	SCF_3	CF_3
CH_3	F	$OCHF_2$	OCF_3	CH_3	F	SCF_3	OCF_3
CH_3	F	$OCHF_2$	SCF_3	CH_3	F	SCF_3	SCF_3
CH_3	F	$OCHF_2$	$OCHF_2$	CH_3	F	SCF_3	$OCHF_2$
CH_3	F	$OCHF_2$	$SCHF_2$	CH_3	F	SCF_3	$SCHF_2$
CH_3	F	$OCHF_2$	C_2F_5	CH_3	F	SCF_3	C_2F_5
CH_3	F	$OCHF_2$	Cl	CH_3	F	SCF_3	Cl
CH_3	F	$OCHF_2$	SCH_2CH_3	CH_3	F	SCF_3	SCH_2CH_3
CH_3	F	$SCHF_2$	CF_3	CH_3	F	Cl	CF_3
CH_3	F	$SCHF_2$	OCF_3	CH_3	F	Cl	OCF_3
CH_3	F	$SCHF_2$	SCF_3	CH_3	F	Cl	SCF_3
CH_3	F	$SCHF_2$	$OCHF_2$	CH_3	F	Cl	$OCHF_2$
CH_3	F	$SCHF_2$	$SCHF_2$	CH_3	F	Cl	$SCHF_2$
CH_3	F	$SCHF_2$	C_2F_5	CH_3	F	Cl	C_2F_5
CH_3	F	$SCHF_2$	Cl	CH_3	F	Cl	Cl
CH_3	F	$SCHF_2$	SCH_2CH_3	CH_3	F	Cl	SCH_2CH_3
CH_3	Cl	CF_3	CF_3	CH_3	Cl	OCF_3	CF_3
CH_3	Cl	CF_3	OCF_3	CH_3	Cl	OCF_3	OCF_3
CH_3	Cl	CF_3	SCF_3	CH_3	Cl	OCF_3	SCF_3
CH_3	Cl	CF_3	$OCHF_2$	CH_3	Cl	OCF_3	$OCHF_2$
CH_3	Cl	CF_3	$SCHF_2$	CH_3	Cl	OCF_3	$SCHF_2$
CH_3	Cl	CF_3	C_2F_5	CH_3	Cl	OCF_3	C_2F_5
CH_3	Cl	CF_3	Cl	CH_3	Cl	OCF_3	Cl
CH_3	Cl	CF_3	SCH_2CH_3	CH_3	Cl	OCF_3	SCH_2CH_3
CH_3	Cl	$OCHF_2$	CF_3	CH_3	Cl	SCF_3	CF_3
CH_3	Cl	$OCHF_2$	OCF_3	CH_3	Cl	SCF_3	OCF_3
CH_3	Cl	$OCHF_2$	SCF_3	CH_3	Cl	SCF_3	SCF_3
CH_3	Cl	$OCHF_2$	$OCHF_2$	CH_3	Cl	SCF_3	$OCHF_2$
CH_3	Cl	$OCHF_2$	$SCHF_2$	CH_3	Cl	SCF_3	$SCHF_2$
CH_3	Cl	$OCHF_2$	C_2F_5	CH_3	Cl	SCF_3	C_2F_5

CH_3	Cl	$OCHF_2$	Cl	CH_3	Cl	SCF_3	Cl
CH_3	Cl	$OCHF_2$	SCH_2CH_3	CH_3	Cl	SCF_3	SCH_2CH_3
CH_3	Cl	$SCHF_2$	CF_3	CH_3	Cl	Cl	CF_3
CH_3	Cl	$SCHF_2$	OCF_3	CH_3	Cl	Cl	OCF_3
CH_3	Cl	$SCHF_2$	SCF_3	CH_3	Cl	Cl	SCF_3
CH_3	Cl	$SCHF_2$	$OCHF_2$	CH_3	Cl	Cl	$OCHF_2$
CH_3	Cl	$SCHF_2$	$SCHF_2$	CH_3	Cl	Cl	$SCHF_2$
CH_3	Cl	$SCHF_2$	C_2F_5	CH_3	Cl	Cl	C_2F_5
CH_3	Cl	$SCHF_2$	Cl	CH_3	Cl	Cl	Cl
CH_3	Cl	$SCHF_2$	SCH_2CH_3	CH_3	Cl	Cl	SCH_2CH_3
OCH_3	H	CF_3	CF_3	OCH_3	H	OCF_3	CF_3
OCH_3	H	CF_3	OCF_3	OCH_3	H	OCF_3	OCF_3
OCH_3	H	CF_3	SCF_3	OCH_3	H	OCF_3	SCF_3
OCH_3	H	CF_3	$OCHF_2$	OCH_3	H	OCF_3	$OCHF_2$
OCH_3	H	CF_3	$SCHF_2$	OCH_3	H	OCF_3	$SCHF_2$
OCH_3	H	CF_3	C_2F_5	OCH_3	H	OCF_3	C_2F_5
OCH_3	H	CF_3	Cl	OCH_3	H	OCF_3	Cl
OCH_3	H	CF_3	SCH_2CH_3	OCH_3	H	OCF_3	SCH_2CH_3
OCH_3	H	$OCHF_2$	CF_3	OCH_3	H	SCF_3	CF_3
OCH_3	H	$OCHF_2$	OCF_3	OCH_3	H	SCF_3	OCF_3
OCH_3	H	$OCHF_2$	SCF_3	OCH_3	H	SCF_3	SCF_3
OCH_3	H	$OCHF_2$	$OCHF_2$	OCH_3	H	SCF_3	$OCHF_2$
OCH_3	H	$OCHF_2$	$SCHF_2$	OCH_3	H	SCF_3	$SCHF_2$
OCH_3	H	$OCHF_2$	C_2F_5	OCH_3	H	SCF_3	C_2F_5
OCH_3	H	$OCHF_2$	Cl	OCH_3	H	SCF_3	Cl
OCH_3	H	$OCHF_2$	SCH_2CH_3	OCH_3	H	SCF_3	SCH_2CH_3
OCH_3	H	$SCHF_2$	CF_3	OCH_3	H	Cl	CF_3
OCH_3	H	$SCHF_2$	OCF_3	OCH_3	H	Cl	OCF_3
OCH_3	H	$SCHF_2$	SCF_3	OCH_3	H	Cl	SCF_3
OCH_3	H	$SCHF_2$	$OCHF_2$	OCH_3	H	Cl	$OCHF_2$
OCH_3	H	$SCHF_2$	$SCHF_2$	OCH_3	H	Cl	$SCHF_2$
OCH_3	H	$SCHF_2$	C_2F_5	OCH_3	H	Cl	C_2F_5
OCH_3	H	$SCHF_2$	Cl	OCH_3	H	Cl	Cl
OCH_3	H	$SCHF_2$	SCH_2CH_3	OCH_3	H	Cl	SCH_2CH_3
OCH_3	CH_3	CF_3	CF_3	OCH_3	CH_3	OCF_3	CF_3
OCH_3	CH_3	CF_3	OCF_3	OCH_3	CH_3	OCF_3	OCF_3
OCH_3	CH_3	CF_3	SCF_3	OCH_3	CH_3	OCF_3	SCF_3
OCH_3	CH_3	CF_3	$OCHF_2$	OCH_3	CH_3	OCF_3	$OCHF_2$

OCH_3	CH_3	CF_3	$SCHF_2$	OCH_3	CH_3	OCF_3	$SCHF_2$
OCH_3	CH_3	CF_3	C_2F_5	OCH_3	CH_3	OCF_3	C_2F_5
OCH_3	CH_3	CF_3	Cl	OCH_3	CH_3	OCF_3	Cl
OCH_3	CH_3	CF_3	SCH_2CH_3	OCH_3	CH_3	OCF_3	SCH_2CH_3
OCH_3	CH_3	$OCHF_2$	CF_3	OCH_3	CH_3	SCF_3	CF_3
OCH_3	CH_3	$OCHF_2$	OCF_3	OCH_3	CH_3	SCF_3	OCF_3
OCH_3	CH_3	$OCHF_2$	SCF_3	OCH_3	CH_3	SCF_3	SCF_3
OCH_3	CH_3	$OCHF_2$	$OCHF_2$	OCH_3	CH_3	SCF_3	$OCHF_2$
OCH_3	CH_3	$OCHF_2$	$SCHF_2$	OCH_3	CH_3	SCF_3	$SCHF_2$
OCH_3	CH_3	$OCHF_2$	C_2F_5	OCH_3	CH_3	SCF_3	C_2F_5
OCH_3	CH_3	$OCHF_2$	Cl	OCH_3	CH_3	SCF_3	Cl
OCH_3	CH_3	$OCHF_2$	SCH_2CH_3	OCH_3	CH_3	SCF_3	SCH_2CH_3
OCH_3	CH_3	$SCHF_2$	CF_3	OCH_3	CH_3	Cl	CF_3
OCH_3	CH_3	$SCHF_2$	OCF_3	OCH_3	CH_3	Cl	OCF_3
OCH_3	CH_3	$SCHF_2$	SCF_3	OCH_3	CH_3	Cl	SCF_3
OCH_3	CH_3	$SCHF_2$	$OCHF_2$	OCH_3	CH_3	Cl	$OCHF_2$
OCH_3	CH_3	$SCHF_2$	$SCHF_2$	OCH_3	CH_3	Cl	$SCHF_2$
OCH_3	CH_3	$SCHF_2$	C_2F_5	OCH_3	CH_3	Cl	C_2F_5
OCH_3	CH_3	$SCHF_2$	Cl	OCH_3	CH_3	Cl	Cl
OCH_3	CH_3	$SCHF_2$	SCH_2CH_3	OCH_3	CH_3	Cl	SCH_2CH_3
OCH_3	F	CF_3	CF_3	OCH_3	F	OCF_3	CF_3
OCH_3	F	CF_3	OCF_3	OCH_3	F	OCF_3	OCF_3
OCH_3	F	CF_3	SCF_3	OCH_3	F	OCF_3	SCF_3
OCH_3	F	CF_3	$OCHF_2$	OCH_3	F	OCF_3	$OCHF_2$
OCH_3	F	CF_3	$SCHF_2$	OCH_3	F	OCF_3	$SCHF_2$
OCH_3	F	CF_3	C_2F_5	OCH_3	F	OCF_3	C_2F_5
OCH_3	F	CF_3	Cl	OCH_3	F	OCF_3	Cl
OCH_3	F	CF_3	SCH_2CH_3	OCH_3	F	OCF_3	SCH_2CH_3
OCH_3	F	$OCHF_2$	CF_3	OCH_3	F	SCF_3	CF_3
OCH_3	F	$OCHF_2$	OCF_3	OCH_3	F	SCF_3	OCF_3
OCH_3	F	$OCHF_2$	SCF_3	OCH_3	F	SCF_3	SCF_3
OCH_3	F	$OCHF_2$	$OCHF_2$	OCH_3	F	SCF_3	$OCHF_2$
OCH_3	F	$OCHF_2$	$SCHF_2$	OCH_3	F	SCF_3	$SCHF_2$
OCH_3	F	$OCHF_2$	C_2F_5	OCH_3	F	SCF_3	C_2F_5
OCH_3	F	$OCHF_2$	Cl	OCH_3	F	SCF_3	Cl
OCH_3	F	$OCHF_2$	SCH_2CH_3	OCH_3	F	SCF_3	SCH_2CH_3
OCH_3	F	$SCHF_2$	CF_3	OCH_3	F	Cl	CF_3
OCH_3	F	$SCHF_2$	OCF_3	OCH_3	F	Cl	OCF_3

OCH_3	F	$SCHF_2$	SCF_3	OCH_3	F	Cl	SCF_3
OCH_3	F	$SCHF_2$	$OCHF_2$	OCH_3	F	Cl	$OCHF_2$
OCH_3	F	$SCHF_2$	$SCHF_2$	OCH_3	F	Cl	$SCHF_2$
OCH_3	F	$SCHF_2$	C_2F_5	OCH_3	F	Cl	C_2F_5
OCH_3	F	$SCHF_2$	Cl	OCH_3	F	Cl	Cl
OCH_3	F	$SCHF_2$	SCH_2CH_3	OCH_3	F	Cl	SCH_2CH_3
OCH_3	Cl	CF_3	CF_3	OCH_3	Cl	OCF_3	CF_3
OCH_3	Cl	CF_3	OCF_3	OCH_3	Cl	OCF_3	OCF_3
OCH_3	Cl	CF_3	SCF_3	OCH_3	Cl	OCF_3	SCF_3
OCH_3	Cl	CF_3	$OCHF_2$	OCH_3	Cl	OCF_3	$OCHF_2$
OCH_3	Cl	CF_3	$SCHF_2$	OCH_3	Cl	OCF_3	$SCHF_2$
OCH_3	Cl	CF_3	C_2F_5	OCH_3	Cl	OCF_3	C_2F_5
OCH_3	Cl	CF_3	Cl	OCH_3	Cl	OCF_3	Cl
OCH_3	Cl	CF_3	SCH_2CH_3	OCH_3	Cl	OCF_3	SCH_2CH_3
OCH_3	Cl	$OCHF_2$	CF_3	OCH_3	Cl	SCF_3	CF_3
OCH_3	Cl	$OCHF_2$	OCF_3	OCH_3	Cl	SCF_3	OCF_3
OCH_3	Cl	$OCHF_2$	SCF_3	OCH_3	Cl	SCF_3	SCF_3
OCH_3	Cl	$OCHF_2$	$OCHF_2$	OCH_3	Cl	SCF_3	$OCHF_2$
OCH_3	Cl	$OCHF_2$	$SCHF_2$	OCH_3	Cl	SCF_3	$SCHF_2$
OCH_3	Cl	$OCHF_2$	C_2F_5	OCH_3	Cl	SCF_3	C_2F_5
OCH_3	Cl	$OCHF_2$	Cl	OCH_3	Cl	SCF_3	Cl
OCH_3	Cl	$OCHF_2$	SCH_2CH_3	OCH_3	Cl	SCF_3	SCH_2CH_3
OCH_3	Cl	$SCHF_2$	CF_3	OCH_3	Cl	Cl	CF_3
OCH_3	Cl	$SCHF_2$	OCF_3	OCH_3	Cl	Cl	OCF_3
OCH_3	Cl	$SCHF_2$	SCF_3	OCH_3	Cl	Cl	SCF_3
OCH_3	Cl	$SCHF_2$	$OCHF_2$	OCH_3	Cl	Cl	$OCHF_2$
OCH_3	Cl	$SCHF_2$	$SCHF_2$	OCH_3	Cl	Cl	$SCHF_2$
OCH_3	Cl	$SCHF_2$	C_2F_5	OCH_3	Cl	Cl	C_2F_5
OCH_3	Cl	$SCHF_2$	Cl	OCH_3	Cl	Cl	Cl
OCH_3	Cl	$SCHF_2$	SCH_2CH_3	OCH_3	Cl	Cl	SCH_2CH_3
CH_2CH_3	H	CF_3	CF_3	CH_2CH_3	H	OCF_3	CF_3
CH_2CH_3	H	CF_3	OCF_3	CH_2CH_3	H	OCF_3	OCF_3
CH_2CH_3	H	CF_3	SCF_3	CH_2CH_3	H	OCF_3	SCF_3
CH_2CH_3	H	CF_3	$OCHF_2$	CH_2CH_3	H	OCF_3	$OCHF_2$
CH_2CH_3	H	CF_3	$SCHF_2$	CH_2CH_3	H	OCF_3	$SCHF_2$
CH_2CH_3	H	CF_3	C_2F_5	CH_2CH_3	H	OCF_3	C_2F_5
CH_2CH_3	H	CF_3	Cl	CH_2CH_3	H	OCF_3	Cl
CH_2CH_3	H	CF_3	SCH_2CH_3	CH_2CH_3	H	OCF_3	SCH_2CH_3

CH_2CH_3	H	$OCHF_2$	CF_3	CH_2CH_3	H	SCF_3	CF_3
CH_2CH_3	H	$OCHF_2$	OCF_3	CH_2CH_3	H	SCF_3	OCF_3
CH_2CH_3	H	$OCHF_2$	SCF_3	CH_2CH_3	H	SCF_3	SCF_3
CH_2CH_3	H	$OCHF_2$	$OCHF_2$	CH_2CH_3	H	SCF_3	$OCHF_2$
CH_2CH_3	H	$OCHF_2$	$SCHF_2$	CH_2CH_3	H	SCF_3	$SCHF_2$
CH_2CH_3	H	$OCHF_2$	C_2F_5	CH_2CH_3	H	SCF_3	C_2F_5
CH_2CH_3	H	$OCHF_2$	Cl	CH_2CH_3	H	SCF_3	Cl
CH_2CH_3	H	$OCHF_2$	SCH_2CH_3	CH_2CH_3	H	SCF_3	SCH_2CH_3
CH_2CH_3	H	$SCHF_2$	CF_3	CH_2CH_3	H	Cl	CF_3
CH_2CH_3	H	$SCHF_2$	OCF_3	CH_2CH_3	H	Cl	OCF_3
CH_2CH_3	H	$SCHF_2$	SCF_3	CH_2CH_3	H	Cl	SCF_3
CH_2CH_3	H	$SCHF_2$	$OCHF_2$	CH_2CH_3	H	Cl	$OCHF_2$
CH_2CH_3	H	$SCHF_2$	$SCHF_2$	CH_2CH_3	H	Cl	$SCHF_2$
CH_2CH_3	H	$SCHF_2$	C_2F_5	CH_2CH_3	H	Cl	C_2F_5
CH_2CH_3	H	$SCHF_2$	Cl	CH_2CH_3	H	Cl	Cl
CH_2CH_3	H	$SCHF_2$	SCH_2CH_3	CH_2CH_3	H	Cl	SCH_2CH_3
CH_2CH_3	CH_3	CF_3	CF_3	CH_2CH_3	CH_3	OCF_3	CF_3
CH_2CH_3	CH_3	CF_3	OCF_3	CH_2CH_3	CH_3	OCF_3	OCF_3
CH_2CH_3	CH_3	CF_3	SCF_3	CH_2CH_3	CH_3	OCF_3	SCF_3
CH_2CH_3	CH_3	CF_3	$OCHF_2$	CH_2CH_3	CH_3	OCF_3	$OCHF_2$
CH_2CH_3	CH_3	CF_3	$SCHF_2$	CH_2CH_3	CH_3	OCF_3	$SCHF_2$
CH_2CH_3	CH_3	CF_3	C_2F_5	CH_2CH_3	CH_3	OCF_3	C_2F_5
CH_2CH_3	CH_3	CF_3	Cl	CH_2CH_3	CH_3	OCF_3	Cl
CH_2CH_3	CH_3	CF_3	SCH_2CH_3	CH_2CH_3	CH_3	OCF_3	SCH_2CH_3
CH_2CH_3	CH_3	$OCHF_2$	CF_3	CH_2CH_3	CH_3	SCF_3	CF_3
CH_2CH_3	CH_3	$OCHF_2$	OCF_3	CH_2CH_3	CH_3	SCF_3	OCF_3
CH_2CH_3	CH_3	$OCHF_2$	SCF_3	CH_2CH_3	CH_3	SCF_3	SCF_3
CH_2CH_3	CH_3	$OCHF_2$	$OCHF_2$	CH_2CH_3	CH_3	SCF_3	$OCHF_2$
CH_2CH_3	CH_3	$OCHF_2$	$SCHF_2$	CH_2CH_3	CH_3	SCF_3	$SCHF_2$
CH_2CH_3	CH_3	$OCHF_2$	C_2F_5	CH_2CH_3	CH_3	SCF_3	C_2F_5
CH_2CH_3	CH_3	$OCHF_2$	Cl	CH_2CH_3	CH_3	SCF_3	Cl
CH_2CH_3	CH_3	$OCHF_2$	SCH_2CH_3	CH_2CH_3	CH_3	SCF_3	SCH_2CH_3
CH_2CH_3	CH_3	$SCHF_2$	CF_3	CH_2CH_3	CH_3	Cl	CF_3
CH_2CH_3	CH_3	$SCHF_2$	OCF_3	CH_2CH_3	CH_3	Cl	OCF_3
CH_2CH_3	CH_3	$SCHF_2$	SCF_3	CH_2CH_3	CH_3	Cl	SCF_3
CH_2CH_3	CH_3	$SCHF_2$	$OCHF_2$	CH_2CH_3	CH_3	Cl	$OCHF_2$
CH_2CH_3	CH_3	$SCHF_2$	$SCHF_2$	CH_2CH_3	CH_3	Cl	$SCHF_2$
CH_2CH_3	CH_3	$SCHF_2$	C_2F_5	CH_2CH_3	CH_3	Cl	C_2F_5

CH_2CH_3	CH_3	$SCHF_2$	Cl	CH_2CH_3	CH_3	Cl	Cl
CH_2CH_3	CH_3	$SCHF_2$	SCH_2CH_3	CH_2CH_3	CH_3	Cl	SCH_2CH_3
CH_2CH_3	F	CF_3	CF_3	CH_2CH_3	F	OCF_3	CF_3
CH_2CH_3	F	CF_3	OCF_3	CH_2CH_3	F	OCF_3	OCF_3
CH_2CH_3	F	CF_3	SCF_3	CH_2CH_3	F	OCF_3	SCF_3
CH_2CH_3	F	CF_3	$OCHF_2$	CH_2CH_3	F	OCF_3	$OCHF_2$
CH_2CH_3	F	CF_3	$SCHF_2$	CH_2CH_3	F	OCF_3	$SCHF_2$
CH_2CH_3	F	CF_3	C_2F_5	CH_2CH_3	F	OCF_3	C_2F_5
CH_2CH_3	F	CF_3	Cl	CH_2CH_3	F	OCF_3	Cl
CH_2CH_3	F	CF_3	SCH_2CH_3	CH_2CH_3	F	OCF_3	SCH_2CH_3
CH_2CH_3	F	$OCHF_2$	CF_3	CH_2CH_3	F	SCF_3	CF_3
CH_2CH_3	F	$OCHF_2$	OCF_3	CH_2CH_3	F	SCF_3	OCF_3
CH_2CH_3	F	$OCHF_2$	SCF_3	CH_2CH_3	F	SCF_3	SCF_3
CH_2CH_3	F	$OCHF_2$	$OCHF_2$	CH_2CH_3	F	SCF_3	$OCHF_2$
CH_2CH_3	F	$OCHF_2$	$SCHF_2$	CH_2CH_3	F	SCF_3	$SCHF_2$
CH_2CH_3	F	$OCHF_2$	C_2F_5	CH_2CH_3	F	SCF_3	C_2F_5
CH_2CH_3	F	$OCHF_2$	Cl	CH_2CH_3	F	SCF_3	Cl
CH_2CH_3	F	$OCHF_2$	SCH_2CH_3	CH_2CH_3	F	SCF_3	SCH_2CH_3
CH_2CH_3	F	$SCHF_2$	CF_3	CH_2CH_3	F	Cl	CF_3
CH_2CH_3	F	$SCHF_2$	OCF_3	CH_2CH_3	F	Cl	OCF_3
CH_2CH_3	F	$SCHF_2$	SCF_3	CH_2CH_3	F	Cl	SCF_3
CH_2CH_3	F	$SCHF_2$	$OCHF_2$	CH_2CH_3	F	Cl	$OCHF_2$
CH_2CH_3	F	$SCHF_2$	$SCHF_2$	CH_2CH_3	F	Cl	$SCHF_2$
CH_2CH_3	F	$SCHF_2$	C_2F_5	CH_2CH_3	F	Cl	C_2F_5
CH_2CH_3	F	$SCHF_2$	Cl	CH_2CH_3	F	Cl	Cl
CH_2CH_3	F	$SCHF_2$	SCH_2CH_3	CH_2CH_3	F	Cl	SCH_2CH_3
CH_2CH_3	Cl	CF_3	CF_3	CH_2CH_3	Cl	OCF_3	CF_3
CH_2CH_3	Cl	CF_3	OCF_3	CH_2CH_3	Cl	OCF_3	OCF_3
CH_2CH_3	Cl	CF_3	SCF_3	CH_2CH_3	Cl	OCF_3	SCF_3
CH_2CH_3	Cl	CF_3	$OCHF_2$	CH_2CH_3	Cl	OCF_3	$OCHF_2$
CH_2CH_3	Cl	CF_3	$SCHF_2$	CH_2CH_3	Cl	OCF_3	$SCHF_2$
CH_2CH_3	Cl	CF_3	C_2F_5	CH_2CH_3	Cl	OCF_3	C_2F_5
CH_2CH_3	Cl	CF_3	Cl	CH_2CH_3	Cl	OCF_3	Cl
CH_2CH_3	Cl	CF_3	SCH_2CH_3	CH_2CH_3	Cl	OCF_3	SCH_2CH_3
CH_2CH_3	Cl	$OCHF_2$	CF_3	CH_2CH_3	Cl	SCF_3	CF_3
CH_2CH_3	Cl	$OCHF_2$	OCF_3	CH_2CH_3	Cl	SCF_3	OCF_3
CH_2CH_3	Cl	$OCHF_2$	SCF_3	CH_2CH_3	Cl	SCF_3	SCF_3
CH_2CH_3	Cl	$OCHF_2$	$OCHF_2$	CH_2CH_3	Cl	SCF_3	$OCHF_2$

CH_2CH_3	Cl	$OCHF_2$	$SCHF_2$	CH_2CH_3	Cl	SCF_3	$SCHF_2$
CH_2CH_3	Cl	$OCHF_2$	C_2F_5	CH_2CH_3	Cl	SCF_3	C_2F_5
CH_2CH_3	Cl	$OCHF_2$	Cl	CH_2CH_3	Cl	SCF_3	Cl
CH_2CH_3	Cl	$OCHF_2$	SCH_2CH_3	CH_2CH_3	Cl	SCF_3	SCH_2CH_3
CH_2CH_3	Cl	$SCHF_2$	CF_3	CH_2CH_3	Cl	Cl	CF_3
CH_2CH_3	Cl	$SCHF_2$	OCF_3	CH_2CH_3	Cl	Cl	OCF_3
CH_2CH_3	Cl	$SCHF_2$	SCF_3	CH_2CH_3	Cl	Cl	SCF_3
CH_2CH_3	Cl	$SCHF_2$	$OCHF_2$	CH_2CH_3	Cl	Cl	$OCHF_2$
CH_2CH_3	Cl	$SCHF_2$	$SCHF_2$	CH_2CH_3	Cl	Cl	$SCHF_2$
CH_2CH_3	Cl	$SCHF_2$	C_2F_5	CH_2CH_3	Cl	Cl	C_2F_5
CH_2CH_3	Cl	$SCHF_2$	Cl	CH_2CH_3	Cl	Cl	Cl
CH_2CH_3	Cl	$SCHF_2$	SCH_2CH_3	CH_2CH_3	Cl	Cl	SCH_2CH_3

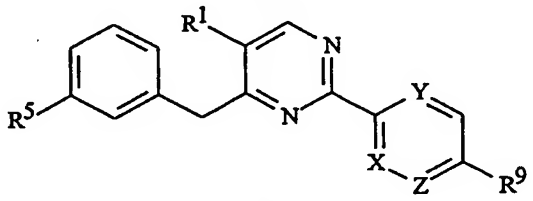
R^3 is F

R^1	R^4	R^5	R^9	R^1	R^4	R^5	R^9
H	F	CF_3	CF_3	H	F	OCF_3	CF_3
H	F	CF_3	OCF_3	H	F	OCF_3	OCF_3
H	F	CF_3	SCF_3	H	F	OCF_3	SCF_3
H	F	CF_3	$OCHF_2$	H	F	OCF_3	$OCHF_2$
H	F	CF_3	$SCHF_2$	H	F	OCF_3	$SCHF_2$
H	F	CF_3	C_2F_5	H	F	OCF_3	C_2F_5
H	F	CF_3	Cl	H	F	OCF_3	Cl
H	F	CF_3	SCH_2CH_3	H	F	OCF_3	SCH_2CH_3
H	F	$OCHF_2$	CF_3	H	F	SCF_3	CF_3
H	F	$OCHF_2$	OCF_3	H	F	SCF_3	OCF_3
H	F	$OCHF_2$	SCF_3	H	F	SCF_3	SCF_3
H	F	$OCHF_2$	$OCHF_2$	H	F	SCF_3	$OCHF_2$
H	F	$OCHF_2$	$SCHF_2$	H	F	SCF_3	$SCHF_2$
H	F	$OCHF_2$	C_2F_5	H	F	SCF_3	C_2F_5
H	F	$OCHF_2$	Cl	H	F	SCF_3	Cl
H	F	$OCHF_2$	SCH_2CH_3	H	F	SCF_3	SCH_2CH_3
H	F	$SCHF_2$	CF_3	H	F	Cl	CF_3
H	F	$SCHF_2$	OCF_3	H	F	Cl	OCF_3
H	F	$SCHF_2$	SCF_3	H	F	Cl	SCF_3
H	F	$SCHF_2$	$OCHF_2$	H	F	Cl	$OCHF_2$
H	F	$SCHF_2$	$SCHF_2$	H	F	Cl	$SCHF_2$
H	F	$SCHF_2$	C_2F_5	H	F	Cl	C_2F_5
H	F	$SCHF_2$	Cl	H	F	Cl	Cl

H	F	$SCHF_2$	SCH_2CH_3	H	F	Cl	SCH_2CH_3
CH_3	F	CF_3	CF_3	CH_3	F	OCF_3	CF_3
CH_3	F	CF_3	OCF_3	CH_3	F	OCF_3	OCF_3
CH_3	F	CF_3	SCF_3	CH_3	F	OCF_3	SCF_3
CH_3	F	CF_3	$OCHF_2$	CH_3	F	OCF_3	$OCHF_2$
CH_3	F	CF_3	$SCHF_2$	CH_3	F	OCF_3	$SCHF_2$
CH_3	F	CF_3	C_2F_5	CH_3	F	OCF_3	C_2F_5
CH_3	F	CF_3	Cl	CH_3	F	OCF_3	Cl
CH_3	F	CF_3	SCH_2CH_3	CH_3	F	OCF_3	SCH_2CH_3
CH_3	F	$OCHF_2$	CF_3	CH_3	F	SCF_3	CF_3
CH_3	F	$OCHF_2$	OCF_3	CH_3	F	SCF_3	OCF_3
CH_3	F	$OCHF_2$	SCF_3	CH_3	F	SCF_3	SCF_3
CH_3	F	$OCHF_2$	$OCHF_2$	CH_3	F	SCF_3	$OCHF_2$
CH_3	F	$OCHF_2$	$SCHF_2$	CH_3	F	SCF_3	$SCHF_2$
CH_3	F	$OCHF_2$	C_2F_5	CH_3	F	SCF_3	C_2F_5
CH_3	F	$OCHF_2$	Cl	CH_3	F	SCF_3	Cl
CH_3	F	$OCHF_2$	SCH_2CH_3	CH_3	F	SCF_3	SCH_2CH_3
CH_3	F	$SCHF_2$	CF_3	CH_3	F	Cl	CF_3
CH_3	F	$SCHF_2$	OCF_3	CH_3	F	Cl	OCF_3
CH_3	F	$SCHF_2$	SCF_3	CH_3	F	Cl	SCF_3
CH_3	F	$SCHF_2$	$OCHF_2$	CH_3	F	Cl	$OCHF_2$
CH_3	F	$SCHF_2$	$SCHF_2$	CH_3	F	Cl	$SCHF_2$
CH_3	F	$SCHF_2$	C_2F_5	CH_3	F	Cl	C_2F_5
CH_3	F	$SCHF_2$	Cl	CH_3	F	Cl	Cl
CH_3	F	$SCHF_2$	SCH_2CH_3	CH_3	F	Cl	SCH_2CH_3
OCH_3	F	CF_3	CF_3	OCH_3	F	OCF_3	CF_3
OCH_3	F	CF_3	OCF_3	OCH_3	F	OCF_3	OCF_3
OCH_3	F	CF_3	SCF_3	OCH_3	F	OCF_3	SCF_3
OCH_3	F	CF_3	$OCHF_2$	OCH_3	F	OCF_3	$OCHF_2$
OCH_3	F	CF_3	$SCHF_2$	OCH_3	F	OCF_3	$SCHF_2$
OCH_3	F	CF_3	C_2F_5	OCH_3	F	OCF_3	C_2F_5
OCH_3	F	CF_3	Cl	OCH_3	F	OCF_3	Cl
OCH_3	F	CF_3	SCH_2CH_3	OCH_3	F	OCF_3	SCH_2CH_3
OCH_3	F	$OCHF_2$	CF_3	OCH_3	F	SCF_3	CF_3
OCH_3	F	$OCHF_2$	OCF_3	OCH_3	F	SCF_3	OCF_3
OCH_3	F	$OCHF_2$	SCF_3	OCH_3	F	SCF_3	SCF_3
OCH_3	F	$OCHF_2$	$OCHF_2$	OCH_3	F	SCF_3	$OCHF_2$
OCH_3	F	$OCHF_2$	$SCHF_2$	OCH_3	F	SCF_3	$SCHF_2$

OCH_3	F	$OCHF_2$	C_2F_5	OCH_3	F	SCF_3	C_2F_5
OCH_3	F	$OCHF_2$	Cl	OCH_3	F	SCF_3	Cl
OCH_3	F	$OCHF_2$	SCH_2CH_3	OCH_3	F	SCF_3	SCH_2CH_3
OCH_3	F	$SCHF_2$	CF_3	OCH_3	F	Cl	CF_3
OCH_3	F	$SCHF_2$	OCF_3	OCH_3	F	Cl	OCF_3
OCH_3	F	$SCHF_2$	SCF_3	OCH_3	F	Cl	SCF_3
OCH_3	F	$SCHF_2$	$OCHF_2$	OCH_3	F	Cl	$OCHF_2$
OCH_3	F	$SCHF_2$	$SCHF_2$	OCH_3	F	Cl	$SCHF_2$
OCH_3	F	$SCHF_2$	C_2F_5	OCH_3	F	Cl	C_2F_5
OCH_3	F	$SCHF_2$	Cl	OCH_3	F	Cl	Cl
OCH_3	F	$SCHF_2$	SCH_2CH_3	OCH_3	F	Cl	SCH_2CH_3
CH_2CH_3	F	CF_3	CF_3	CH_2CH_3	F	OCF_3	CF_3
CH_2CH_3	F	CF_3	OCF_3	CH_2CH_3	F	OCF_3	OCF_3
CH_2CH_3	F	CF_3	SCF_3	CH_2CH_3	F	OCF_3	SCF_3
CH_2CH_3	F	CF_3	$OCHF_2$	CH_2CH_3	F	OCF_3	$OCHF_2$
CH_2CH_3	F	CF_3	$SCHF_2$	CH_2CH_3	F	OCF_3	$SCHF_2$
CH_2CH_3	F	CF_3	C_2F_5	CH_2CH_3	F	OCF_3	C_2F_5
CH_2CH_3	F	CF_3	Cl	CH_2CH_3	F	OCF_3	Cl
CH_2CH_3	F	CF_3	SCH_2CH_3	CH_2CH_3	F	OCF_3	SCH_2CH_3
CH_2CH_3	F	$OCHF_2$	CF_3	CH_2CH_3	F	SCF_3	CF_3
CH_2CH_3	F	$OCHF_2$	OCF_3	CH_2CH_3	F	SCF_3	OCF_3
CH_2CH_3	F	$OCHF_2$	SCF_3	CH_2CH_3	F	SCF_3	SCF_3
CH_2CH_3	F	$OCHF_2$	$OCHF_2$	CH_2CH_3	F	SCF_3	$OCHF_2$
CH_2CH_3	F	$OCHF_2$	$SCHF_2$	CH_2CH_3	F	SCF_3	$SCHF_2$
CH_2CH_3	F	$OCHF_2$	C_2F_5	CH_2CH_3	F	SCF_3	C_2F_5
CH_2CH_3	F	$OCHF_2$	Cl	CH_2CH_3	F	SCF_3	Cl
CH_2CH_3	F	$OCHF_2$	SCH_2CH_3	CH_2CH_3	F	SCF_3	SCH_2CH_3
CH_2CH_3	F	$SCHF_2$	CF_3	CH_2CH_3	F	Cl	CF_3
CH_2CH_3	F	$SCHF_2$	OCF_3	CH_2CH_3	F	Cl	OCF_3
CH_2CH_3	F	$SCHF_2$	SCF_3	CH_2CH_3	F	Cl	SCF_3
CH_2CH_3	F	$SCHF_2$	$OCHF_2$	CH_2CH_3	F	Cl	$OCHF_2$
CH_2CH_3	F	$SCHF_2$	$SCHF_2$	CH_2CH_3	F	Cl	$SCHF_2$
CH_2CH_3	F	$SCHF_2$	C_2F_5	CH_2CH_3	F	Cl	C_2F_5
CH_2CH_3	F	$SCHF_2$	Cl	CH_2CH_3	F	Cl	Cl
CH_2CH_3	F	$SCHF_2$	SCH_2CH_3	CH_2CH_3	F	Cl	SCH_2CH_3

Table 2



X is N; Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are CH; Z is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are N; Z is CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is CH; Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

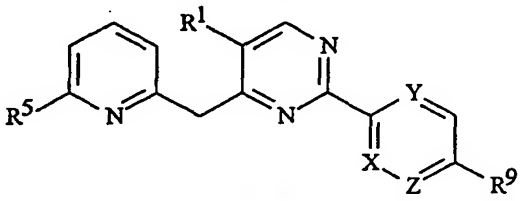
Y is CH; X and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X, Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Table 3



X, Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Z are CH; Y is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are CH; Z is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are N; Z is CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is CH; Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

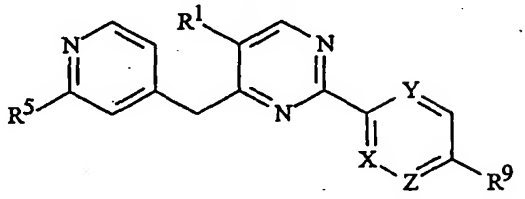
Y is CH; X and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X, Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Table 4



X, Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Z are CH; Y is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are CH; Z is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are N; Z is CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is CH; Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

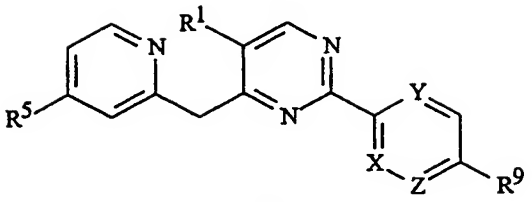
Y is CH; X and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X, Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Table 5



X, Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Z are CH; Y is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are CH; Z is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are N; Z is CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is CH; Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

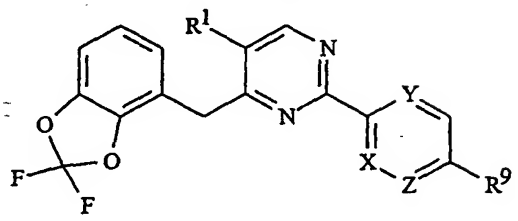
Y is CH; X and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X, Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Table 6



X, Y and Z are CH

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X and Z are CH; Y is N

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X and Y are CH; Z is N

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X and Y are N; Z is CH

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X is CH; Y and Z are N

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

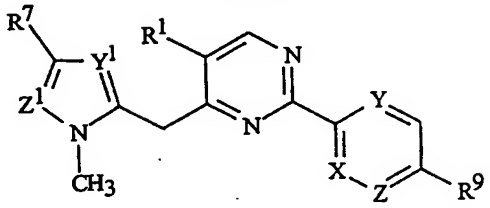
Y is CH; X and Z are N

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X, Y and Z are N

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

Table 7



X, Y and Z are CH

R^1	R^7	R^9	Y^1	Z^1
CH_2CH_3	CF_3	CF_3	CH	N
CH_2CH_3	CF_3	CF_3	N	CH
CH_2CH_3	CF_3	CF_3	N	N
CH_2CH_3	CF_3	OCF_3	CH	N
CH_2CH_3	CF_3	OCF_3	N	CH
CH_2CH_3	CF_3	OCF_3	N	N
CH_2CH_3	OCF_3	CF_3	CH	N
CH_2CH_3	OCF_3	CF_3	N	CH
CH_2CH_3	OCF_3	CF_3	N	N
CH_2CH_3	OCF_3	OCF_3	CH	N
CH_2CH_3	OCF_3	OCF_3	N	CH
CH_2CH_3	OCF_3	OCF_3	N	N
CH_3	CF_3	CF_3	CH	N
CH_3	CF_3	CF_3	N	CH
CH_3	CF_3	CF_3	N	N
CH_3	CF_3	OCF_3	CH	N
CH_3	CF_3	OCF_3	N	CH
CH_3	CF_3	OCF_3	N	N
CH_3	OCF_3	CF_3	CH	N
CH_3	OCF_3	CF_3	N	CH
CH_3	OCF_3	CF_3	N	N
CH_3	OCF_3	OCF_3	CH	N
CH_3	OCF_3	OCF_3	N	CH
CH_3	OCF_3	OCF_3	N	N

X is N; Y and Z are CH

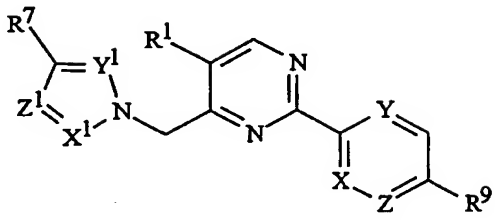
R^1	R^7	R^9	Y^1	Z^1
CH_2CH_3	CF_3	CF_3	CH	N
CH_2CH_3	CF_3	CF_3	N	CH
CH_2CH_3	CF_3	CF_3	N	N
CH_2CH_3	CF_3	OCF_3	CH	N
CH_2CH_3	CF_3	OCF_3	N	CH
CH_2CH_3	CF_3	OCF_3	N	N
CH_2CH_3	OCF_3	CF_3	CH	N
CH_2CH_3	OCF_3	CF_3	N	CH
CH_2CH_3	OCF_3	CF_3	N	N
CH_2CH_3	OCF_3	OCF_3	CH	N
CH_2CH_3	OCF_3	OCF_3	N	CH
CH_2CH_3	OCF_3	OCF_3	N	N
CH_3	CF_3	CF_3	CH	N
CH_3	CF_3	CF_3	N	CH
CH_3	CF_3	CF_3	N	N
CH_3	CF_3	OCF_3	CH	N
CH_3	CF_3	OCF_3	N	CH
CH_3	CF_3	OCF_3	N	N
CH_3	OCF_3	CF_3	CH	N
CH_3	OCF_3	CF_3	N	CH
CH_3	OCF_3	CF_3	N	N
CH_3	OCF_3	OCF_3	CH	N
CH_3	OCF_3	OCF_3	N	CH
CH_3	OCF_3	OCF_3	N	N

X and Y are CH; Z is N

R^1	R^7	R^9	Y^1	Z^1
CH_2CH_3	CF_3	CF_3	CH	N
CH_2CH_3	CF_3	CF_3	N	CH
CH_2CH_3	CF_3	CF_3	N	N
CH_2CH_3	CF_3	OCF_3	CH	N
CH_2CH_3	CF_3	OCF_3	N	CH
CH_2CH_3	CF_3	OCF_3	N	N
CH_2CH_3	OCF_3	CF_3	CH	N
CH_2CH_3	OCF_3	CF_3	N	CH
CH_2CH_3	OCF_3	CF_3	N	N
CH_2CH_3	OCF_3	OCF_3	CH	N
CH_2CH_3	OCF_3	OCF_3	N	CH
CH_2CH_3	OCF_3	OCF_3	N	N

CH_3	CF_3	CF_3	CH	N
CH_3	CF_3	CF_3	N	CH
CH_3	CF_3	CF_3	N	N
CH_3	CF_3	OCF_3	CH	N
CH_3	CF_3	OCF_3	N	CH
CH_3	CF_3	OCF_3	N	N
CH_3	OCF_3	CF_3	CH	N
CH_3	OCF_3	CF_3	N	CH
CH_3	OCF_3	CF_3	N	N
CH_3	OCF_3	OCF_3	CH	N
CH_3	OCF_3	OCF_3	N	CH
CH_3	OCF_3	OCF_3	N	N

Table 8



X, Y and Z are CH

R^1	R^7	R^9	X^1	Y^1	Z^1
CH_2CH_3	CF_3	CF_3	CH	CH	N
CH_2CH_3	CF_3	CF_3	CH	N	CH
CH_2CH_3	CF_3	CF_3	N	CH	CH
CH_2CH_3	CF_3	CF_3	CH	N	N
CH_2CH_3	CF_3	OCF_3	CH	CH	N
CH_2CH_3	CF_3	OCF_3	CH	N	CH
CH_2CH_3	CF_3	OCF_3	N	CH	CH
CH_2CH_3	CF_3	OCF_3	CH	N	N
CH_2CH_3	OCF_3	CF_3	CH	CH	N
CH_2CH_3	OCF_3	CF_3	CH	N	CH
CH_2CH_3	OCF_3	CF_3	N	CH	CH
CH_2CH_3	OCF_3	CF_3	CH	N	N
CH_2CH_3	OCF_3	OCF_3	CH	CH	N
CH_2CH_3	OCF_3	OCF_3	CH	N	CH
CH_2CH_3	OCF_3	OCF_3	N	CH	CH
CH_2CH_3	OCF_3	OCF_3	CH	N	N
CH_3	CF_3	CF_3	CH	CH	N
CH_3	CF_3	CF_3	CH	N	CH

CH_3	CF_3	CF_3	N	CH	CH
CH_3	CF_3	CF_3	CH	N	N
CH_3	CF_3	OCF_3	CH	CH	N
CH_3	CF_3	OCF_3	CH	N	CH
CH_3	CF_3	OCF_3	N	CH	CH
CH_3	CF_3	OCF_3	CH	N	N
CH_3	OCF_3	CF_3	CH	CH	N
CH_3	OCF_3	CF_3	CH	N	CH
CH_3	OCF_3	CF_3	N	CH	CH
CH_3	OCF_3	CF_3	CH	N	N
CH_3	OCF_3	OCF_3	CH	CH	N
CH_3	OCF_3	OCF_3	CH	N	CH
CH_3	OCF_3	OCF_3	N	CH	CH
CH_3	OCF_3	OCF_3	CH	N	N

X is N; Y and Z are CH

R^1	R^7	R^9	X^1	Y^1	Z^1
CH_2CH_3	CF_3	CF_3	CH	CH	N
CH_2CH_3	CF_3	CF_3	CH	N	CH
CH_2CH_3	CF_3	CF_3	N	CH	CH
CH_2CH_3	CF_3	CF_3	CH	N	N
CH_2CH_3	CF_3	OCF_3	CH	CH	N
CH_2CH_3	CF_3	OCF_3	CH	N	CH
CH_2CH_3	CF_3	OCF_3	N	CH	CH
CH_2CH_3	CF_3	OCF_3	CH	N	N
CH_2CH_3	OCF_3	CF_3	CH	CH	N
CH_2CH_3	OCF_3	CF_3	CH	N	CH
CH_2CH_3	OCF_3	CF_3	N	CH	CH
CH_2CH_3	OCF_3	CF_3	CH	N	N
CH_2CH_3	OCF_3	OCF_3	CH	CH	N
CH_2CH_3	OCF_3	OCF_3	CH	N	CH
CH_2CH_3	OCF_3	OCF_3	N	CH	CH
CH_2CH_3	OCF_3	OCF_3	CH	N	N
CH_3	CF_3	CF_3	CH	CH	N
CH_3	CF_3	CF_3	CH	N	CH
CH_3	CF_3	CF_3	N	CH	CH
CH_3	CF_3	CF_3	CH	N	N
CH_3	CF_3	OCF_3	CH	CH	N

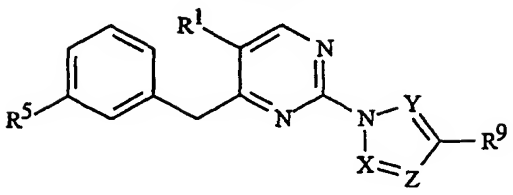
CH_3	CF_3	OCF_3	CH	N	CH
CH_3	CF_3	OCF_3	N	CH	CH
CH_3	CF_3	OCF_3	CH	N	N
CH_3	OCF_3	CF_3	CH	CH	N
CH_3	OCF_3	CF_3	CH	N	CH
CH_3	OCF_3	CF_3	N	CH	CH
CH_3	OCF_3	CF_3	CH	N	N
CH_3	OCF_3	OCF_3	CH	CH	N
CH_3	OCF_3	OCF_3	CH	N	CH
CH_3	OCF_3	OCF_3	N	CH	CH
CH_3	OCF_3	OCF_3	CH	N	N

X and Y are CH; Z is N

R^1	R^7	R^9	X^1	Y^1	Z^1
CH_2CH_3	CF_3	CF_3	CH	CH	N
CH_2CH_3	CF_3	CF_3	CH	N	CH
CH_2CH_3	CF_3	CF_3	N	CH	CH
CH_2CH_3	CF_3	CF_3	CH	N	N
CH_2CH_3	CF_3	OCF_3	CH	CH	N
CH_2CH_3	CF_3	OCF_3	CH	N	CH
CH_2CH_3	CF_3	OCF_3	N	CH	CH
CH_2CH_3	CF_3	OCF_3	CH	N	N
CH_2CH_3	OCF_3	CF_3	CH	CH	N
CH_2CH_3	OCF_3	CF_3	CH	N	CH
CH_2CH_3	OCF_3	CF_3	N	CH	CH
CH_2CH_3	OCF_3	CF_3	CH	N	N
CH_2CH_3	OCF_3	OCF_3	CH	CH	N
CH_2CH_3	OCF_3	OCF_3	CH	N	CH
CH_2CH_3	OCF_3	OCF_3	N	CH	CH
CH_2CH_3	OCF_3	OCF_3	CH	N	N
CH_3	CF_3	CF_3	CH	CH	N
CH_3	CF_3	CF_3	CH	N	CH
CH_3	CF_3	CF_3	N	CH	CH
CH_3	CF_3	CF_3	CH	N	N
CH_3	CF_3	OCF_3	CH	CH	N
CH_3	CF_3	OCF_3	CH	N	CH
CH_3	CF_3	OCF_3	N	CH	CH
CH_3	CF_3	OCF_3	CH	N	N
CH_3	OCF_3	CF_3	CH	CH	N

CH_3	OCF_3	CF_3	CH	N	CH
CH_3	OCF_3	CF_3	N	CH	CH
CH_3	OCF_3	CF_3	CH	N	N
CH_3	OCF_3	OCF_3	CH	CH	N
CH_3	OCF_3	OCF_3	CH	N	CH
CH_3	OCF_3	OCF_3	N	CH	CH
CH_3	OCF_3	OCF_3	CH	N	N

Table 9



X, Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is N; Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Z are CH; Y is N

CH_2CH_3	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
H	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are CH; Z is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are N; Z is CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is CH; Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

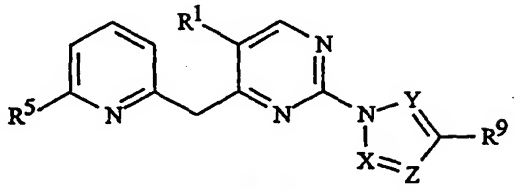
Y is CH; X and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X, Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Table 10



X, Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is N; Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Z are CH; Y is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are CH; Z is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are N; Z is CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is CH; Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Y is CH; X and Z are N

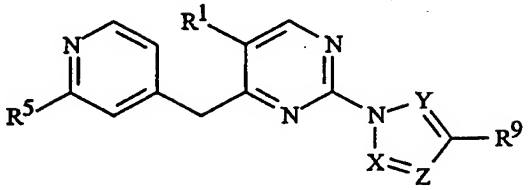
R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3

CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X, Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Table 11



X, Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is N; Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Z are CH; Y is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are CH; Z is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3

CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are N; Z is CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is CH; Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

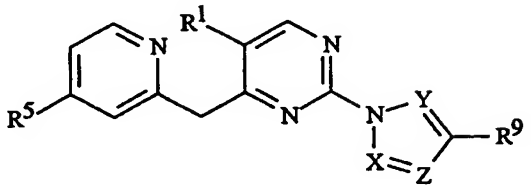
Y is CH; X and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X, Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Table 12



X, Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3

CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is N; Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Z are CH; Y is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are CH; Z is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are N; Z is CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is CH; Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Y is CH; X and Z are N

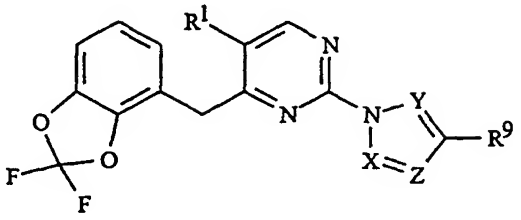
R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3

CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X, Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Table 13



X, Y and Z are CH

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X is N; Y and Z are CH

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X and Z are CH; Y is N

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X and Y are CH; Z is N

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X and Y are N; Z is CH

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X is CH; Y and Z are N

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9

CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

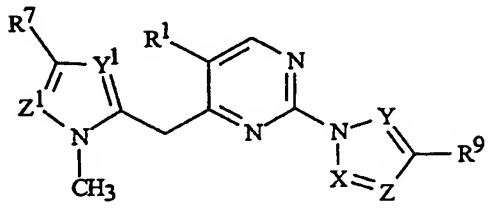
Y is CH; X and Z are N

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X, Y and Z are N

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

Table 14



X is N; Y and Z are CH

R^1	R^7	R^9	Y^1	Z^1
CH_2CH_3	CF_3	CF_3	CH	N
CH_2CH_3	CF_3	CF_3	N	CH
CH_2CH_3	CF_3	CF_3	N	N
CH_2CH_3	CF_3	OCF_3	CH	N
CH_2CH_3	CF_3	OCF_3	N	CH
CH_2CH_3	CF_3	OCF_3	N	N
CH_2CH_3	OCF_3	CF_3	CH	N
CH_2CH_3	OCF_3	CF_3	N	CH
CH_2CH_3	OCF_3	CF_3	N	N
CH_2CH_3	OCF_3	OCF_3	CH	N
CH_2CH_3	OCF_3	OCF_3	N	CH
CH_2CH_3	OCF_3	OCF_3	N	N
CH_3	CF_3	CF_3	CH	N
CH_3	CF_3	CF_3	N	CH
CH_3	CF_3	CF_3	N	N
CH_3	CF_3	OCF_3	CH	N
CH_3	CF_3	OCF_3	N	CH
CH_3	CF_3	OCF_3	N	N
CH_3	OCF_3	CF_3	CH	N
CH_3	OCF_3	CF_3	N	CH
CH_3	OCF_3	CF_3	N	N

CH_3	OCF_3	OCF_3	CH	N
CH_3	OCF_3	OCF_3	N	CH
CH_3	OCF_3	OCF_3	N	N

X and Z are CH; Y is N

R^1	R^7	R^9	Y^1	Z^1
CH_2CH_3	CF_3	CF_3	CH	N
CH_2CH_3	CF_3	CF_3	N	CH
CH_2CH_3	CF_3	CF_3	N	N
CH_2CH_3	CF_3	OCF_3	CH	N
CH_2CH_3	CF_3	OCF_3	N	CH
CH_2CH_3	CF_3	OCF_3	N	N
CH_2CH_3	OCF_3	CF_3	CH	N
CH_2CH_3	OCF_3	CF_3	N	CH
CH_2CH_3	OCF_3	CF_3	N	N
CH_2CH_3	OCF_3	OCF_3	CH	N
CH_2CH_3	OCF_3	OCF_3	N	CH
CH_2CH_3	OCF_3	OCF_3	N	N
CH_3	CF_3	CF_3	CH	N
CH_3	CF_3	CF_3	N	CH
CH_3	CF_3	CF_3	N	N
CH_3	CF_3	OCF_3	CH	N
CH_3	CF_3	OCF_3	N	CH
CH_3	CF_3	OCF_3	N	N
CH_3	OCF_3	CF_3	CH	N
CH_3	OCF_3	CF_3	N	CH
CH_3	OCF_3	CF_3	N	N
CH_3	OCF_3	OCF_3	CH	N
CH_3	OCF_3	OCF_3	N	CH
CH_3	OCF_3	OCF_3	N	N

X and Y are CH; Z is N

R^1	R^7	R^9	Y^1	Z^1
CH_2CH_3	CF_3	CF_3	CH	N
CH_2CH_3	CF_3	CF_3	N	CH
CH_2CH_3	CF_3	CF_3	N	N
CH_2CH_3	CF_3	OCF_3	CH	N
CH_2CH_3	CF_3	OCF_3	N	CH
CH_2CH_3	CF_3	OCF_3	N	N
CH_2CH_3	OCF_3	CF_3	CH	N

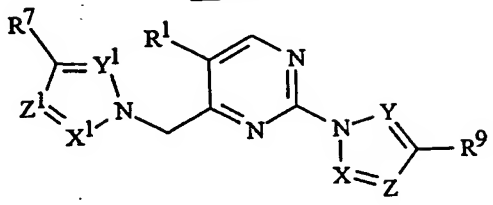
CH_2CH_3	OCF_3	CF_3	N	CH
CH_2CH_3	OCF_3	CF_3	N	N
CH_2CH_3	OCF_3	OCF_3	CH	N
CH_2CH_3	OCF_3	OCF_3	N	CH
CH_2CH_3	OCF_3	OCF_3	N	N
CH_3	CF_3	CF_3	CH	N
CH_3	CF_3	CF_3	N	CH
CH_3	CF_3	CF_3	N	N
CH_3	CF_3	OCF_3	CH	N
CH_3	CF_3	OCF_3	N	CH
CH_3	CF_3	OCF_3	N	N
CH_3	OCF_3	CF_3	CH	N
CH_3	OCF_3	CF_3	N	CH
CH_3	OCF_3	CF_3	N	N
CH_3	OCF_3	OCF_3	CH	N
CH_3	OCF_3	OCF_3	N	CH
CH_3	OCF_3	OCF_3	N	N

X is CH; Y and Z are N

R^1	R^7	R^9	Y^1	Z^1
CH_2CH_3	CF_3	CF_3	CH	N
CH_2CH_3	CF_3	CF_3	N	CH
CH_2CH_3	CF_3	CF_3	N	N
CH_2CH_3	CF_3	OCF_3	CH	N
CH_2CH_3	CF_3	OCF_3	N	CH
CH_2CH_3	CF_3	OCF_3	N	N
CH_2CH_3	OCF_3	CF_3	CH	N
CH_2CH_3	OCF_3	CF_3	N	CH
CH_2CH_3	OCF_3	CF_3	N	N
CH_2CH_3	OCF_3	OCF_3	CH	N
CH_2CH_3	OCF_3	OCF_3	N	CH
CH_2CH_3	OCF_3	OCF_3	N	N
CH_3	CF_3	CF_3	CH	N
CH_3	CF_3	CF_3	N	CH
CH_3	CF_3	CF_3	N	N
CH_3	CF_3	OCF_3	CH	N
CH_3	CF_3	OCF_3	N	CH
CH_3	CF_3	OCF_3	N	N

CH_3	OCF_3	CF_3	CH	N
CH_3	OCF_3	CF_3	N	CH
CH_3	OCF_3	CF_3	N	N
CH_3	OCF_3	OCF_3	CH	N
CH_3	OCF_3	OCF_3	N	CH
CH_3	OCF_3	OCF_3	N	N

Table 15



X is N; Y and Z are CH

R^1	R^7	R^9	X^1	Y^1	Z^1
CH_2CH_3	CF_3	CF_3	CH	CH	N
CH_2CH_3	CF_3	CF_3	CH	N	CH
CH_2CH_3	CF_3	CF_3	N	CH	CH
CH_2CH_3	CF_3	CF_3	CH	N	N
CH_2CH_3	CF_3	OCF_3	CH	CH	N
CH_2CH_3	CF_3	OCF_3	CH	N	CH
CH_2CH_3	CF_3	OCF_3	N	CH	CH
CH_2CH_3	CF_3	OCF_3	CH	N	N
CH_2CH_3	OCF_3	CF_3	CH	CH	N
CH_2CH_3	OCF_3	CF_3	CH	N	CH
CH_2CH_3	OCF_3	CF_3	N	CH	CH
CH_2CH_3	OCF_3	CF_3	CH	N	N
CH_2CH_3	OCF_3	OCF_3	CH	CH	N
CH_2CH_3	OCF_3	OCF_3	CH	N	CH
CH_2CH_3	OCF_3	OCF_3	N	CH	CH
CH_2CH_3	OCF_3	OCF_3	CH	N	N
CH_3	CF_3	CF_3	CH	CH	N
CH_3	CF_3	CF_3	CH	N	CH
CH_3	CF_3	CF_3	N	CH	CH
CH_3	CF_3	CF_3	CH	N	N
CH_3	CF_3	OCF_3	CH	CH	N
CH_3	CF_3	OCF_3	CH	N	CH
CH_3	CF_3	OCF_3	N	CH	CH

CH_3	CF_3	OCF_3	CH	N	N
CH_3	OCF_3	CF_3	CH	CH	N
CH_3	OCF_3	CF_3	CH	N	CH
CH_3	OCF_3	CF_3	N	CH	CH
CH_3	OCF_3	CF_3	CH	N	N
CH_3	OCF_3	OCF_3	CH	CH	N
CH_3	OCF_3	OCF_3	CH	N	CH
CH_3	OCF_3	OCF_3	N	CH	CH
CH_3	OCF_3	OCF_3	CH	N	N

X and Z are CH; Y is N

R^1	R^7	R^9	X^1	Y^1	Z^1
CH_2CH_3	CF_3	CF_3	CH	CH	N
CH_2CH_3	CF_3	CF_3	CH	N	CH
CH_2CH_3	CF_3	CF_3	N	CH	CH
CH_2CH_3	CF_3	CF_3	CH	N	N
CH_2CH_3	CF_3	OCF_3	CH	CH	N
CH_2CH_3	CF_3	OCF_3	CH	N	CH
CH_2CH_3	CF_3	OCF_3	N	CH	CH
CH_2CH_3	CF_3	OCF_3	CH	N	N
CH_2CH_3	OCF_3	CF_3	CH	CH	N
CH_2CH_3	OCF_3	CF_3	CH	N	CH
CH_2CH_3	OCF_3	CF_3	N	CH	CH
CH_2CH_3	OCF_3	CF_3	CH	N	N
CH_2CH_3	OCF_3	OCF_3	CH	CH	N
CH_2CH_3	OCF_3	OCF_3	CH	N	CH
CH_2CH_3	OCF_3	OCF_3	N	CH	CH
CH_2CH_3	OCF_3	OCF_3	CH	N	N
CH_3	CF_3	CF_3	CH	CH	N
CH_3	CF_3	CF_3	CH	N	CH
CH_3	CF_3	CF_3	N	CH	CH
CH_3	CF_3	CF_3	CH	N	N
CH_3	CF_3	OCF_3	CH	CH	N
CH_3	CF_3	OCF_3	CH	N	CH
CH_3	CF_3	OCF_3	N	CH	CH
CH_3	CF_3	OCF_3	CH	N	N
CH_3	OCF_3	CF_3	CH	CH	N
CH_3	OCF_3	CF_3	CH	N	CH

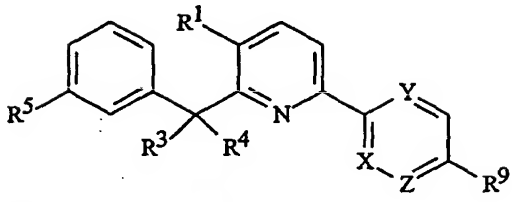
CH_3	OCF_3	CF_3	N	CH	CH
CH_3	OCF_3	CF_3	CH	N	N
CH_3	OCF_3	OCF_3	CH	CH	N
CH_3	OCF_3	OCF_3	CH	N	CH
CH_3	OCF_3	OCF_3	N	CH	CH
CH_3	OCF_3	OCF_3	CH	N	N

X and Y are CH; Z is N

R^1	R^7	R^9	X^1	Y^1	Z^1
CH_2CH_3	CF_3	CF_3	CH	CH	N
CH_2CH_3	CF_3	CF_3	CH	N	CH
CH_2CH_3	CF_3	CF_3	N	CH	CH
CH_2CH_3	CF_3	CF_3	CH	N	N
CH_2CH_3	CF_3	OCF_3	CH	CH	N
CH_2CH_3	CF_3	OCF_3	CH	N	CH
CH_2CH_3	CF_3	OCF_3	N	CH	CH
CH_2CH_3	CF_3	OCF_3	CH	N	N
CH_2CH_3	OCF_3	CF_3	CH	CH	N
CH_2CH_3	OCF_3	CF_3	CH	N	CH
CH_2CH_3	OCF_3	CF_3	N	CH	CH
CH_2CH_3	OCF_3	CF_3	CH	N	N
CH_2CH_3	OCF_3	OCF_3	CH	CH	N
CH_2CH_3	OCF_3	OCF_3	CH	N	CH
CH_2CH_3	OCF_3	OCF_3	N	CH	CH
CH_2CH_3	OCF_3	OCF_3	CH	N	N
CH_3	CF_3	CF_3	CH	CH	N
CH_3	CF_3	CF_3	CH	N	CH
CH_3	CF_3	CF_3	N	CH	CH
CH_3	CF_3	CF_3	CH	N	N
CH_3	CF_3	OCF_3	CH	CH	N
CH_3	CF_3	OCF_3	CH	N	CH
CH_3	CF_3	OCF_3	N	CH	CH
CH_3	CF_3	OCF_3	CH	N	N
CH_3	OCF_3	CF_3	CH	CH	N
CH_3	OCF_3	CF_3	CH	N	CH
CH_3	OCF_3	CF_3	N	CH	CH
CH_3	OCF_3	CF_3	CH	N	N
CH_3	OCF_3	OCF_3	CH	CH	N

CH_3	OCF_3	OCF_3	CH	N	CH
CH_3	OCF_3	OCF_3	N	CH	CH
CH_3	OCF_3	OCF_3	CH	N	N

Table 16



R^3 is H; X, Y and Z are CH

R^1	R^4	R^5	R^9	R^1	R^4	R^5	R^9
CH_2CH_3	H	CF_3	CF_3	CH_2CH_3	H	OCF_3	CF_3
CH_2CH_3	H	CF_3	OCF_3	CH_2CH_3	H	OCF_3	OCF_3
CH_2CH_3	H	CF_3	SCF_3	CH_2CH_3	H	OCF_3	SCF_3
CH_2CH_3	H	CF_3	$OCHF_2$	CH_2CH_3	H	OCF_3	$OCHF_2$
CH_2CH_3	H	CF_3	$SCHF_2$	CH_2CH_3	H	OCF_3	$SCHF_2$
CH_2CH_3	H	CF_3	C_2F_5	CH_2CH_3	H	OCF_3	C_2F_5
CH_2CH_3	H	CF_3	Cl	CH_2CH_3	H	OCF_3	Cl
CH_2CH_3	H	CF_3	SCH_2CH_3	CH_2CH_3	H	OCF_3	SCH_2CH_3
CH_2CH_3	H	$OCHF_2$	CF_3	CH_2CH_3	H	SCF_3	CF_3
CH_2CH_3	H	$OCHF_2$	OCF_3	CH_2CH_3	H	SCF_3	OCF_3
CH_2CH_3	H	$OCHF_2$	SCF_3	CH_2CH_3	H	SCF_3	SCF_3
CH_2CH_3	H	$OCHF_2$	$OCHF_2$	CH_2CH_3	H	SCF_3	$OCHF_2$
CH_2CH_3	H	$OCHF_2$	$SCHF_2$	CH_2CH_3	H	SCF_3	$SCHF_2$
CH_2CH_3	H	$OCHF_2$	C_2F_5	CH_2CH_3	H	SCF_3	C_2F_5
CH_2CH_3	H	$OCHF_2$	Cl	CH_2CH_3	H	SCF_3	Cl
CH_2CH_3	H	$OCHF_2$	SCH_2CH_3	CH_2CH_3	H	SCF_3	SCH_2CH_3
CH_2CH_3	H	$SCHF_2$	CF_3	CH_2CH_3	H	Cl	CF_3
CH_2CH_3	H	$SCHF_2$	OCF_3	CH_2CH_3	H	Cl	OCF_3
CH_2CH_3	H	$SCHF_2$	SCF_3	CH_2CH_3	H	Cl	SCF_3
CH_2CH_3	H	$SCHF_2$	$OCHF_2$	CH_2CH_3	H	Cl	$OCHF_2$
CH_2CH_3	H	$SCHF_2$	$SCHF_2$	CH_2CH_3	H	Cl	$SCHF_2$
CH_2CH_3	H	$SCHF_2$	C_2F_5	CH_2CH_3	H	Cl	C_2F_5
CH_2CH_3	H	$SCHF_2$	Cl	CH_2CH_3	H	Cl	Cl
CH_2CH_3	H	$SCHF_2$	SCH_2CH_3	CH_2CH_3	H	Cl	SCH_2CH_3
CH_2CH_3	CH_3	CF_3	CF_3	CH_2CH_3	CH_3	OCF_3	CF_3
CH_2CH_3	CH_3	CF_3	OCF_3	CH_2CH_3	CH_3	OCF_3	OCF_3

CH_2CH_3	CH_3	CF_3	SCF_3	CH_2CH_3	CH_3	OCF_3	SCF_3
CH_2CH_3	CH_3	CF_3	$OCHF_2$	CH_2CH_3	CH_3	OCF_3	$OCHF_2$
CH_2CH_3	CH_3	CF_3	$SCHF_2$	CH_2CH_3	CH_3	OCF_3	$SCHF_2$
CH_2CH_3	CH_3	CF_3	C_2F_5	CH_2CH_3	CH_3	OCF_3	C_2F_5
CH_2CH_3	CH_3	CF_3	Cl	CH_2CH_3	CH_3	OCF_3	Cl
CH_2CH_3	CH_3	CF_3	SCH_2CH_3	CH_2CH_3	CH_3	OCF_3	SCH_2CH_3
CH_2CH_3	CH_3	$OCHF_2$	CF_3	CH_2CH_3	CH_3	SCF_3	CF_3
CH_2CH_3	CH_3	$OCHF_2$	OCF_3	CH_2CH_3	CH_3	SCF_3	OCF_3
CH_2CH_3	CH_3	$OCHF_2$	SCF_3	CH_2CH_3	CH_3	SCF_3	SCF_3
CH_2CH_3	CH_3	$OCHF_2$	$OCHF_2$	CH_2CH_3	CH_3	SCF_3	$OCHF_2$
CH_2CH_3	CH_3	$OCHF_2$	$SCHF_2$	CH_2CH_3	CH_3	SCF_3	$SCHF_2$
CH_2CH_3	CH_3	$OCHF_2$	C_2F_5	CH_2CH_3	CH_3	SCF_3	C_2F_5
CH_2CH_3	CH_3	$OCHF_2$	Cl	CH_2CH_3	CH_3	SCF_3	Cl
CH_2CH_3	CH_3	$OCHF_2$	SCH_2CH_3	CH_2CH_3	CH_3	SCF_3	SCH_2CH_3
CH_2CH_3	CH_3	$SCHF_2$	CF_3	CH_2CH_3	CH_3	Cl	CF_3
CH_2CH_3	CH_3	$SCHF_2$	OCF_3	CH_2CH_3	CH_3	Cl	OCF_3
CH_2CH_3	CH_3	$SCHF_2$	SCF_3	CH_2CH_3	CH_3	Cl	SCF_3
CH_2CH_3	CH_3	$SCHF_2$	$OCHF_2$	CH_2CH_3	CH_3	Cl	$OCHF_2$
CH_2CH_3	CH_3	$SCHF_2$	$SCHF_2$	CH_2CH_3	CH_3	Cl	$SCHF_2$
CH_2CH_3	CH_3	$SCHF_2$	C_2F_5	CH_2CH_3	CH_3	Cl	C_2F_5
CH_2CH_3	CH_3	$SCHF_2$	Cl	CH_2CH_3	CH_3	Cl	Cl
CH_2CH_3	CH_3	$SCHF_2$	SCH_2CH_3	CH_2CH_3	CH_3	Cl	SCH_2CH_3
CH_2CH_3	F	CF_3	CF_3	CH_2CH_3	F	OCF_3	CF_3
CH_2CH_3	F	CF_3	OCF_3	CH_2CH_3	F	OCF_3	OCF_3
CH_2CH_3	F	CF_3	SCF_3	CH_2CH_3	F	OCF_3	SCF_3
CH_2CH_3	F	CF_3	$OCHF_2$	CH_2CH_3	F	OCF_3	$OCHF_2$
CH_2CH_3	F	CF_3	$SCHF_2$	CH_2CH_3	F	OCF_3	$SCHF_2$
CH_2CH_3	F	CF_3	C_2F_5	CH_2CH_3	F	OCF_3	C_2F_5
CH_2CH_3	F	CF_3	Cl	CH_2CH_3	F	OCF_3	Cl
CH_2CH_3	F	CF_3	SCH_2CH_3	CH_2CH_3	F	OCF_3	SCH_2CH_3
CH_2CH_3	F	$OCHF_2$	CF_3	CH_2CH_3	F	SCF_3	CF_3
CH_2CH_3	F	$OCHF_2$	OCF_3	CH_2CH_3	F	SCF_3	OCF_3
CH_2CH_3	F	$OCHF_2$	SCF_3	CH_2CH_3	F	SCF_3	SCF_3
CH_2CH_3	F	$OCHF_2$	$OCHF_2$	CH_2CH_3	F	SCF_3	$OCHF_2$
CH_2CH_3	F	$OCHF_2$	$SCHF_2$	CH_2CH_3	F	SCF_3	$SCHF_2$
CH_2CH_3	F	$OCHF_2$	C_2F_5	CH_2CH_3	F	SCF_3	C_2F_5
CH_2CH_3	F	$OCHF_2$	Cl	CH_2CH_3	F	SCF_3	Cl
CH_2CH_3	F	$OCHF_2$	SCH_2CH_3	CH_2CH_3	F	SCF_3	SCH_2CH_3

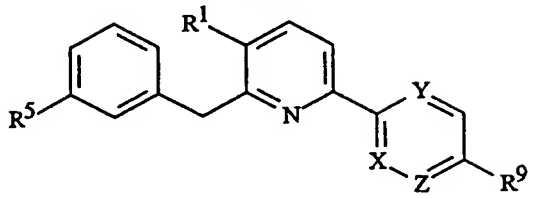
CH_2CH_3	F	$SCHF_2$	CF_3	CH_2CH_3	F	Cl	CF_3
CH_2CH_3	F	$SCHF_2$	OCF_3	CH_2CH_3	F	Cl	OCF_3
CH_2CH_3	F	$SCHF_2$	SCF_3	CH_2CH_3	F	Cl	SCF_3
CH_2CH_3	F	$SCHF_2$	$OCHF_2$	CH_2CH_3	F	Cl	$OCHF_2$
CH_2CH_3	F	$SCHF_2$	$SCHF_2$	CH_2CH_3	F	Cl	$SCHF_2$
CH_2CH_3	F	$SCHF_2$	C_2F_5	CH_2CH_3	F	Cl	C_2F_5
CH_2CH_3	F	$SCHF_2$	Cl	CH_2CH_3	F	Cl	Cl
CH_2CH_3	F	$SCHF_2$	SCH_2CH_3	CH_2CH_3	F	Cl	SCH_2CH_3
CH_2CH_3	Cl	CF_3	CF_3	CH_2CH_3	Cl	OCF_3	CF_3
CH_2CH_3	Cl	CF_3	OCF_3	CH_2CH_3	Cl	OCF_3	OCF_3
CH_2CH_3	Cl	CF_3	SCF_3	CH_2CH_3	Cl	OCF_3	SCF_3
CH_2CH_3	Cl	CF_3	$OCHF_2$	CH_2CH_3	Cl	OCF_3	$OCHF_2$
CH_2CH_3	Cl	CF_3	$SCHF_2$	CH_2CH_3	Cl	OCF_3	$SCHF_2$
CH_2CH_3	Cl	CF_3	C_2F_5	CH_2CH_3	Cl	OCF_3	C_2F_5
CH_2CH_3	Cl	CF_3	Cl	CH_2CH_3	Cl	OCF_3	Cl
CH_2CH_3	Cl	CF_3	SCH_2CH_3	CH_2CH_3	Cl	OCF_3	SCH_2CH_3
CH_2CH_3	Cl	$OCHF_2$	CF_3	CH_2CH_3	Cl	SCF_3	CF_3
CH_2CH_3	Cl	$OCHF_2$	OCF_3	CH_2CH_3	Cl	SCF_3	OCF_3
CH_2CH_3	Cl	$OCHF_2$	SCF_3	CH_2CH_3	Cl	SCF_3	SCF_3
CH_2CH_3	Cl	$OCHF_2$	$OCHF_2$	CH_2CH_3	Cl	SCF_3	$OCHF_2$
CH_2CH_3	Cl	$OCHF_2$	$SCHF_2$	CH_2CH_3	Cl	SCF_3	$SCHF_2$
CH_2CH_3	Cl	$OCHF_2$	C_2F_5	CH_2CH_3	Cl	SCF_3	C_2F_5
CH_2CH_3	Cl	$OCHF_2$	Cl	CH_2CH_3	Cl	SCF_3	Cl
CH_2CH_3	Cl	$OCHF_2$	SCH_2CH_3	CH_2CH_3	Cl	SCF_3	SCH_2CH_3
CH_2CH_3	Cl	$SCHF_2$	CF_3	CH_2CH_3	Cl	Cl	CF_3
CH_2CH_3	Cl	$SCHF_2$	OCF_3	CH_2CH_3	Cl	Cl	OCF_3
CH_2CH_3	Cl	$SCHF_2$	SCF_3	CH_2CH_3	Cl	Cl	SCF_3
CH_2CH_3	Cl	$SCHF_2$	$OCHF_2$	CH_2CH_3	Cl	Cl	$OCHF_2$
CH_2CH_3	Cl	$SCHF_2$	$SCHF_2$	CH_2CH_3	Cl	Cl	$SCHF_2$
CH_2CH_3	Cl	$SCHF_2$	C_2F_5	CH_2CH_3	Cl	Cl	C_2F_5
CH_2CH_3	Cl	$SCHF_2$	Cl	CH_2CH_3	Cl	Cl	Cl
CH_2CH_3	Cl	$SCHF_2$	SCH_2CH_3	CH_2CH_3	Cl	Cl	SCH_2CH_3
CH_3	H	CF_3	CF_3	CH_3	H	OCF_3	CF_3
CH_3	H	CF_3	OCF_3	CH_3	H	OCF_3	OCF_3
CH_3	H	CF_3	SCF_3	CH_3	H	OCF_3	SCF_3
CH_3	H	CF_3	$OCHF_2$	CH_3	H	OCF_3	$OCHF_2$
CH_3	H	CF_3	$SCHF_2$	CH_3	H	OCF_3	$SCHF_2$
CH_3	H	CF_3	C_2F_5	CH_3	H	OCF_3	C_2F_5

CH_3	H	CF_3	Cl	CH_3	H	OCF_3	Cl
CH_3	H	CF_3	SCH_2CH_3	CH_3	H	OCF_3	SCH_2CH_3
CH_3	H	$OCHF_2$	CF_3	CH_3	H	SCF_3	CF_3
CH_3	H	$OCHF_2$	OCF_3	CH_3	H	SCF_3	OCF_3
CH_3	H	$OCHF_2$	SCF_3	CH_3	H	SCF_3	SCF_3
CH_3	H	$OCHF_2$	$OCHF_2$	CH_3	H	SCF_3	$OCHF_2$
CH_3	H	$OCHF_2$	$SCHF_2$	CH_3	H	SCF_3	$SCHF_2$
CH_3	H	$OCHF_2$	C_2F_5	CH_3	H	SCF_3	C_2F_5
CH_3	H	$OCHF_2$	Cl	CH_3	H	SCF_3	Cl
CH_3	H	$OCHF_2$	SCH_2CH_3	CH_3	H	SCF_3	SCH_2CH_3
CH_3	H	$SCHF_2$	CF_3	CH_3	H	Cl	CF_3
CH_3	H	$SCHF_2$	OCF_3	CH_3	H	Cl	OCF_3
CH_3	H	$SCHF_2$	SCF_3	CH_3	H	Cl	SCF_3
CH_3	H	$SCHF_2$	$OCHF_2$	CH_3	H	Cl	$OCHF_2$
CH_3	H	$SCHF_2$	$SCHF_2$	CH_3	H	Cl	$SCHF_2$
CH_3	H	$SCHF_2$	C_2F_5	CH_3	H	Cl	C_2F_5
CH_3	H	$SCHF_2$	Cl	CH_3	H	Cl	Cl
CH_3	H	$SCHF_2$	SCH_2CH_3	CH_3	H	Cl	SCH_2CH_3
CH_3	CH_3	CF_3	CF_3	CH_3	CH_3	OCF_3	CF_3
CH_3	CH_3	CF_3	OCF_3	CH_3	CH_3	OCF_3	OCF_3
CH_3	CH_3	CF_3	SCF_3	CH_3	CH_3	OCF_3	SCF_3
CH_3	CH_3	CF_3	$OCHF_2$	CH_3	CH_3	OCF_3	$OCHF_2$
CH_3	CH_3	CF_3	$SCHF_2$	CH_3	CH_3	OCF_3	$SCHF_2$
CH_3	CH_3	CF_3	C_2F_5	CH_3	CH_3	OCF_3	C_2F_5
CH_3	CH_3	CF_3	Cl	CH_3	CH_3	OCF_3	Cl
CH_3	CH_3	CF_3	SCH_2CH_3	CH_3	CH_3	OCF_3	SCH_2CH_3
CH_3	CH_3	$OCHF_2$	CF_3	CH_3	CH_3	SCF_3	CF_3
CH_3	CH_3	$OCHF_2$	OCF_3	CH_3	CH_3	SCF_3	OCF_3
CH_3	CH_3	$OCHF_2$	SCF_3	CH_3	CH_3	SCF_3	SCF_3
CH_3	CH_3	$OCHF_2$	$OCHF_2$	CH_3	CH_3	SCF_3	$OCHF_2$
CH_3	CH_3	$OCHF_2$	$SCHF_2$	CH_3	CH_3	SCF_3	$SCHF_2$
CH_3	CH_3	$OCHF_2$	C_2F_5	CH_3	CH_3	SCF_3	C_2F_5
CH_3	CH_3	$OCHF_2$	Cl	CH_3	CH_3	SCF_3	Cl
CH_3	CH_3	$OCHF_2$	SCH_2CH_3	CH_3	CH_3	SCF_3	SCH_2CH_3
CH_3	CH_3	$SCHF_2$	CF_3	CH_3	CH_3	Cl	CF_3
CH_3	CH_3	$SCHF_2$	OCF_3	CH_3	CH_3	Cl	OCF_3
CH_3	CH_3	$SCHF_2$	SCF_3	CH_3	CH_3	Cl	SCF_3
CH_3	CH_3	$SCHF_2$	$OCHF_2$	CH_3	CH_3	Cl	$OCHF_2$

CH_3	CH_3	$SCHF_2$	$SCHF_2$	CH_3	CH_3	Cl	$SCHF_2$
CH_3	CH_3	$SCHF_2$	C_2F_5	CH_3	CH_3	Cl	C_2F_5
CH_3	CH_3	$SCHF_2$	Cl	CH_3	CH_3	Cl	Cl
CH_3	CH_3	$SCHF_2$	SCH_2CH_3	CH_3	CH_3	Cl	SCH_2CH_3
CH_3	F	CF_3	CF_3	CH_3	F	OCF_3	CF_3
CH_3	F	CF_3	OCF_3	CH_3	F	OCF_3	OCF_3
CH_3	F	CF_3	SCF_3	CH_3	F	OCF_3	SCF_3
CH_3	F	CF_3	$OCHF_2$	CH_3	F	OCF_3	$OCHF_2$
CH_3	F	CF_3	$SCHF_2$	CH_3	F	OCF_3	$SCHF_2$
CH_3	F	CF_3	C_2F_5	CH_3	F	OCF_3	C_2F_5
CH_3	F	CF_3	Cl	CH_3	F	OCF_3	Cl
CH_3	F	CF_3	SCH_2CH_3	CH_3	F	OCF_3	SCH_2CH_3
CH_3	F	$OCHF_2$	CF_3	CH_3	F	SCF_3	CF_3
CH_3	F	$OCHF_2$	OCF_3	CH_3	F	SCF_3	OCF_3
CH_3	F	$OCHF_2$	SCF_3	CH_3	F	SCF_3	SCF_3
CH_3	F	$OCHF_2$	$OCHF_2$	CH_3	F	SCF_3	$OCHF_2$
CH_3	F	$OCHF_2$	$SCHF_2$	CH_3	F	SCF_3	$SCHF_2$
CH_3	F	$OCHF_2$	C_2F_5	CH_3	F	SCF_3	C_2F_5
CH_3	F	$OCHF_2$	Cl	CH_3	F	SCF_3	Cl
CH_3	F	$OCHF_2$	SCH_2CH_3	CH_3	F	SCF_3	SCH_2CH_3
CH_3	F	$SCHF_2$	CF_3	CH_3	F	Cl	CF_3
CH_3	F	$SCHF_2$	OCF_3	CH_3	F	Cl	OCF_3
CH_3	F	$SCHF_2$	SCF_3	CH_3	F	Cl	SCF_3
CH_3	F	$SCHF_2$	$OCHF_2$	CH_3	F	Cl	$OCHF_2$
CH_3	F	$SCHF_2$	$SCHF_2$	CH_3	F	Cl	$SCHF_2$
CH_3	F	$SCHF_2$	C_2F_5	CH_3	F	Cl	C_2F_5
CH_3	F	$SCHF_2$	Cl	CH_3	F	Cl	Cl
CH_3	F	$SCHF_2$	SCH_2CH_3	CH_3	F	Cl	SCH_2CH_3
CH_3	Cl	CF_3	CF_3	CH_3	Cl	OCF_3	CF_3
CH_3	Cl	CF_3	OCF_3	CH_3	Cl	OCF_3	OCF_3
CH_3	Cl	CF_3	SCF_3	CH_3	Cl	OCF_3	SCF_3
CH_3	Cl	CF_3	$OCHF_2$	CH_3	Cl	OCF_3	$OCHF_2$
CH_3	Cl	CF_3	$SCHF_2$	CH_3	Cl	OCF_3	$SCHF_2$
CH_3	Cl	CF_3	C_2F_5	CH_3	Cl	OCF_3	C_2F_5
CH_3	Cl	CF_3	Cl	CH_3	Cl	OCF_3	Cl
CH_3	Cl	CF_3	SCH_2CH_3	CH_3	Cl	OCF_3	SCH_2CH_3
CH_3	Cl	$OCHF_2$	CF_3	CH_3	Cl	SCF_3	CF_3
CH_3	Cl	$OCHF_2$	OCF_3	CH_3	Cl	SCF_3	OCF_3

CH_3	Cl	$OCHF_2$	SCF_3	CH_3	Cl	SCF_3	SCF_3
CH_3	Cl	$OCHF_2$	$OCHF_2$	CH_3	Cl	SCF_3	$OCHF_2$
CH_3	Cl	$OCHF_2$	$SCHF_2$	CH_3	Cl	SCF_3	$SCHF_2$
CH_3	Cl	$OCHF_2$	C_2F_5	CH_3	Cl	SCF_3	C_2F_5
CH_3	Cl	$OCHF_2$	Cl	CH_3	Cl	SCF_3	Cl
CH_3	Cl	$OCHF_2$	SCH_2CH_3	CH_3	Cl	SCF_3	SCH_2CH_3
CH_3	Cl	$SCHF_2$	CF_3	CH_3	Cl	Cl	CF_3
CH_3	Cl	$SCHF_2$	OCF_3	CH_3	Cl	Cl	OCF_3
CH_3	Cl	$SCHF_2$	SCF_3	CH_3	Cl	Cl	SCF_3
CH_3	Cl	$SCHF_2$	$OCHF_2$	CH_3	Cl	Cl	$OCHF_2$
CH_3	Cl	$SCHF_2$	$SCHF_2$	CH_3	Cl	Cl	$SCHF_2$
CH_3	Cl	$SCHF_2$	C_2F_5	CH_3	Cl	Cl	C_2F_5
CH_3	Cl	$SCHF_2$	Cl	CH_3	Cl	Cl	Cl
CH_3	Cl	$SCHF_2$	SCH_2CH_3	CH_3	Cl	Cl	SCH_2CH_3

Table 17



X is N; Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Z are CH; Y is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are CH; Z is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3

CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are N; Z is CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is CH; Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

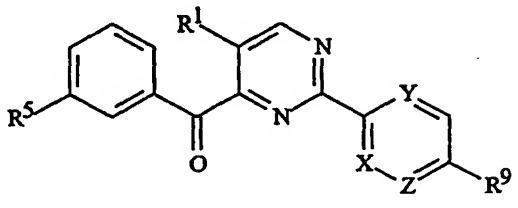
Y is CH; X and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X, Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Table 18



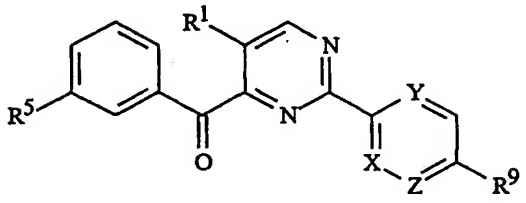
X, Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
H	CF_3	CF_3	H	OCF_3	CF_3
H	CF_3	OCF_3	H	OCF_3	OCF_3
H	CF_3	SCF_3	H	OCF_3	SCF_3
H	CF_3	$OCHF_2$	H	OCF_3	$OCHF_2$
H	CF_3	$SCHF_2$	H	OCF_3	$SCHF_2$
H	CF_3	C_2F_5	H	OCF_3	C_2F_5
H	CF_3	Cl	H	OCF_3	Cl
H	CF_3	SCH_2CH_3	H	OCF_3	SCH_2CH_3
H	$OCHF_2$	CF_3	H	SCF_3	CF_3
H	$OCHF_2$	OCF_3	H	SCF_3	OCF_3
H	$OCHF_2$	SCF_3	H	SCF_3	SCF_3
H	$OCHF_2$	$OCHF_2$	H	SCF_3	$OCHF_2$
H	$OCHF_2$	$SCHF_2$	H	SCF_3	$SCHF_2$
H	$OCHF_2$	C_2F_5	H	SCF_3	C_2F_5
H	$OCHF_2$	Cl	H	SCF_3	Cl
H	$OCHF_2$	SCH_2CH_3	H	SCF_3	SCH_2CH_3
H	$SCHF_2$	CF_3	H	Cl	CF_3
H	$SCHF_2$	OCF_3	H	Cl	OCF_3
H	$SCHF_2$	SCF_3	H	Cl	SCF_3
H	$SCHF_2$	$OCHF_2$	H	Cl	$OCHF_2$
H	$SCHF_2$	$SCHF_2$	H	Cl	$SCHF_2$
H	$SCHF_2$	C_2F_5	H	Cl	C_2F_5
H	$SCHF_2$	Cl	H	Cl	Cl
H	$SCHF_2$	SCH_2CH_3	H	Cl	SCH_2CH_3
CH_3	CF_3	CF_3	CH_3	OCF_3	CF_3
CH_3	CF_3	OCF_3	CH_3	OCF_3	OCF_3
CH_3	CF_3	SCF_3	CH_3	OCF_3	SCF_3
CH_3	CF_3	$OCHF_2$	CH_3	OCF_3	$OCHF_2$
CH_3	CF_3	$SCHF_2$	CH_3	OCF_3	$SCHF_2$
CH_3	CF_3	C_2F_5	CH_3	OCF_3	C_2F_5
CH_3	CF_3	Cl	CH_3	OCF_3	Cl
CH_3	CF_3	SCH_2CH_3	CH_3	OCF_3	SCH_2CH_3
CH_3	$OCHF_2$	CF_3	CH_3	SCF_3	CF_3
CH_3	$OCHF_2$	OCF_3	CH_3	SCF_3	OCF_3
CH_3	$OCHF_2$	SCF_3	CH_3	SCF_3	SCF_3
CH_3	$OCHF_2$	$OCHF_2$	CH_3	SCF_3	$OCHF_2$

CH_3	$OCHF_2$	$SCHF_2$	CH_3	SCF_3	$SCHF_2$
CH_3	$OCHF_2$	C_2F_5	CH_3	SCF_3	C_2F_5
CH_3	$OCHF_2$	Cl	CH_3	SCF_3	Cl
CH_3	$OCHF_2$	SCH_2CH_3	CH_3	SCF_3	SCH_2CH_3
CH_3	$SCHF_2$	CF_3	CH_3	Cl	CF_3
CH_3	$SCHF_2$	OCF_3	CH_3	Cl	OCF_3
CH_3	$SCHF_2$	SCF_3	CH_3	Cl	SCF_3
CH_3	$SCHF_2$	$OCHF_2$	CH_3	Cl	$OCHF_2$
CH_3	$SCHF_2$	$SCHF_2$	CH_3	Cl	$SCHF_2$
CH_3	$SCHF_2$	C_2F_5	CH_3	Cl	C_2F_5
CH_3	$SCHF_2$	Cl	CH_3	Cl	Cl
CH_3	$SCHF_2$	SCH_2CH_3	CH_3	Cl	SCH_2CH_3
OCH_3	CF_3	CF_3	OCH_3	OCF_3	CF_3
OCH_3	CF_3	OCF_3	OCH_3	OCF_3	OCF_3
OCH_3	CF_3	SCF_3	OCH_3	OCF_3	SCF_3
OCH_3	CF_3	$OCHF_2$	OCH_3	OCF_3	$OCHF_2$
OCH_3	CF_3	$SCHF_2$	OCH_3	OCF_3	$SCHF_2$
OCH_3	CF_3	C_2F_5	OCH_3	OCF_3	C_2F_5
OCH_3	CF_3	Cl	OCH_3	OCF_3	Cl
OCH_3	CF_3	SCH_2CH_3	OCH_3	OCF_3	SCH_2CH_3
OCH_3	$OCHF_2$	CF_3	OCH_3	SCF_3	CF_3
OCH_3	$OCHF_2$	OCF_3	OCH_3	SCF_3	OCF_3
OCH_3	$OCHF_2$	SCF_3	OCH_3	SCF_3	SCF_3
OCH_3	$OCHF_2$	$OCHF_2$	OCH_3	SCF_3	$OCHF_2$
OCH_3	$OCHF_2$	$SCHF_2$	OCH_3	SCF_3	$SCHF_2$
OCH_3	$OCHF_2$	C_2F_5	OCH_3	SCF_3	C_2F_5
OCH_3	$OCHF_2$	Cl	OCH_3	SCF_3	Cl
OCH_3	$OCHF_2$	SCH_2CH_3	OCH_3	SCF_3	SCH_2CH_3
OCH_3	$SCHF_2$	CF_3	OCH_3	Cl	CF_3
OCH_3	$SCHF_2$	OCF_3	OCH_3	Cl	OCF_3
OCH_3	$SCHF_2$	SCF_3	OCH_3	Cl	SCF_3
OCH_3	$SCHF_2$	$OCHF_2$	OCH_3	Cl	$OCHF_2$
OCH_3	$SCHF_2$	$SCHF_2$	OCH_3	Cl	$SCHF_2$
OCH_3	$SCHF_2$	C_2F_5	OCH_3	Cl	C_2F_5
OCH_3	$SCHF_2$	Cl	OCH_3	Cl	Cl
OCH_3	$SCHF_2$	SCH_2CH_3	OCH_3	Cl	SCH_2CH_3
CH_2CH_3	CF_3	CF_3	CH_2CH_3	OCF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_2CH_3	OCF_3	OCF_3

CH_2CH_3	CF_3	SCF_3	CH_2CH_3	OCF_3	SCF_3
CH_2CH_3	CF_3	$OCHF_2$	CH_2CH_3	OCF_3	$OCHF_2$
CH_2CH_3	CF_3	$SCHF_2$	CH_2CH_3	OCF_3	$SCHF_2$
CH_2CH_3	CF_3	C_2F_5	CH_2CH_3	OCF_3	C_2F_5
CH_2CH_3	CF_3	Cl	CH_2CH_3	OCF_3	Cl
CH_2CH_3	CF_3	SCH_2CH_3	CH_2CH_3	OCF_3	SCH_2CH_3
CH_2CH_3	$OCHF_2$	CF_3	CH_2CH_3	SCF_3	CF_3
CH_2CH_3	$OCHF_2$	OCF_3	CH_2CH_3	SCF_3	OCF_3
CH_2CH_3	$OCHF_2$	SCF_3	CH_2CH_3	SCF_3	SCF_3
CH_2CH_3	$OCHF_2$	$OCHF_2$	CH_2CH_3	SCF_3	$OCHF_2$
CH_2CH_3	$OCHF_2$	$SCHF_2$	CH_2CH_3	SCF_3	$SCHF_2$
CH_2CH_3	$OCHF_2$	C_2F_5	CH_2CH_3	SCF_3	C_2F_5
CH_2CH_3	$OCHF_2$	Cl	CH_2CH_3	SCF_3	Cl
CH_2CH_3	$OCHF_2$	SCH_2CH_3	CH_2CH_3	SCF_3	SCH_2CH_3
CH_2CH_3	$SCHF_2$	CF_3	CH_2CH_3	Cl	CF_3
CH_2CH_3	$SCHF_2$	OCF_3	CH_2CH_3	Cl	OCF_3
CH_2CH_3	$SCHF_2$	SCF_3	CH_2CH_3	Cl	SCF_3
CH_2CH_3	$SCHF_2$	$OCHF_2$	CH_2CH_3	Cl	$OCHF_2$
CH_2CH_3	$SCHF_2$	$SCHF_2$	CH_2CH_3	Cl	$SCHF_2$
CH_2CH_3	$SCHF_2$	C_2F_5	CH_2CH_3	Cl	C_2F_5
CH_2CH_3	$SCHF_2$	Cl	CH_2CH_3	Cl	Cl
CH_2CH_3	$SCHF_2$	SCH_2CH_3	CH_2CH_3	Cl	SCH_2CH_3

Table 19



X is N; Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are CH; Z is N

R^1	R^5	R^9	R^1	R^5	R^9

CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are N; Z is CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is CH; Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

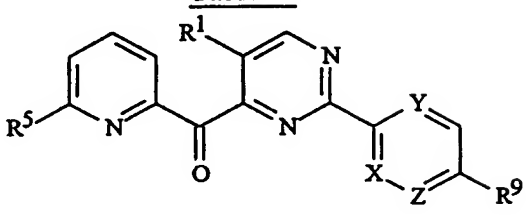
Y is CH; X and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X, Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Table 20



X, Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Z are CH; Y is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are CH; Z is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are N; Z is CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is CH; Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Y is CH; X and Z are N

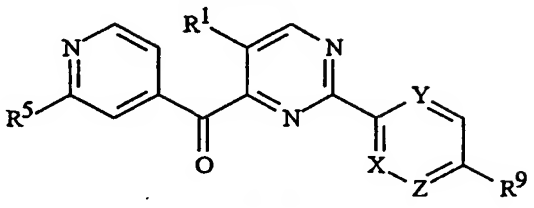
R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3

CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X, Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Table 21



X, Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Z are CH; Y is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are CH; Z is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are N; Z is CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3

CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is CH; Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

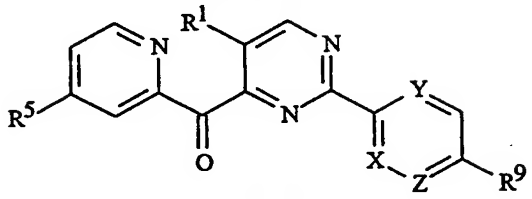
Y is CH; X and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X, Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Table 22



X, Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Z are CH; Y is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3

CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are CH; Z is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are N; Z is CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is CH; Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

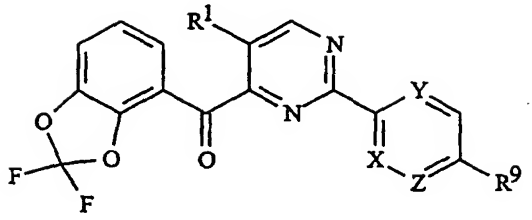
Y is CH; X and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X, Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Table 23



X, Y and Z are CH

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X and Z are CH; Y is N

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X and Y are CH; Z is N

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X and Y are N; Z is CH

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X is CH; Y and Z are N

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

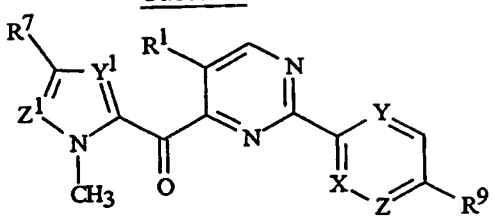
Y is CH; X and Z are N

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X, Y and Z are N

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

Table 24



X, Y and Z are CH

R^1	R^7	R^9	Y^1	Z^1
CH_2CH_3	CF_3	CF_3	CH	N
CH_2CH_3	CF_3	CF_3	N	CH
CH_2CH_3	CF_3	CF_3	N	N
CH_2CH_3	CF_3	OCF_3	CH	N
CH_2CH_3	CF_3	OCF_3	N	CH
CH_2CH_3	CF_3	OCF_3	N	N
CH_2CH_3	OCF_3	CF_3	CH	N
CH_2CH_3	OCF_3	CF_3	N	CH
CH_2CH_3	OCF_3	CF_3	N	N
CH_2CH_3	OCF_3	OCF_3	CH	N
CH_2CH_3	OCF_3	OCF_3	N	CH
CH_2CH_3	OCF_3	OCF_3	N	N
CH_3	CF_3	CF_3	CH	N
CH_3	CF_3	CF_3	N	CH
CH_3	CF_3	CF_3	N	N
CH_3	CF_3	OCF_3	CH	N
CH_3	CF_3	OCF_3	N	CH
CH_3	CF_3	OCF_3	N	N
CH_3	OCF_3	CF_3	CH	N
CH_3	OCF_3	CF_3	N	CH
CH_3	OCF_3	CF_3	N	N
CH_3	OCF_3	OCF_3	CH	N
CH_3	OCF_3	OCF_3	N	CH
CH_3	OCF_3	OCF_3	N	N

X is N; Y and Z are CH

R^1	R^7	R^9	Y^1	Z^1
CH_2CH_3	CF_3	CF_3	CH	N
CH_2CH_3	CF_3	CF_3	N	CH
CH_2CH_3	CF_3	CF_3	N	N

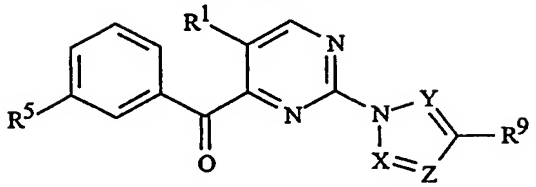
CH_2CH_3	CF_3	OCF_3	CH	N
CH_2CH_3	CF_3	OCF_3	N	CH
CH_2CH_3	CF_3	OCF_3	N	N
CH_2CH_3	OCF_3	CF_3	CH	N
CH_2CH_3	OCF_3	CF_3	N	CH
CH_2CH_3	OCF_3	CF_3	N	N
CH_2CH_3	OCF_3	OCF_3	CH	N
CH_2CH_3	OCF_3	OCF_3	N	CH
CH_2CH_3	OCF_3	OCF_3	N	N
CH_3	CF_3	CF_3	CH	N
CH_3	CF_3	CF_3	N	CH
CH_3	CF_3	CF_3	N	N
CH_3	CF_3	OCF_3	CH	N
CH_3	CF_3	OCF_3	N	CH
CH_3	CF_3	OCF_3	N	N
CH_3	OCF_3	CF_3	CH	N
CH_3	OCF_3	CF_3	N	CH
CH_3	OCF_3	CF_3	N	N
CH_3	OCF_3	OCF_3	CH	N
CH_3	OCF_3	OCF_3	N	CH
CH_3	OCF_3	OCF_3	N	N

X and Y are CH; Z is N

R^1	R^7	R^9	Y^1	Z^1
CH_2CH_3	CF_3	CF_3	CH	N
CH_2CH_3	CF_3	CF_3	N	CH
CH_2CH_3	CF_3	CF_3	N	N
CH_2CH_3	CF_3	OCF_3	CH	N
CH_2CH_3	CF_3	OCF_3	N	CH
CH_2CH_3	CF_3	OCF_3	N	N
CH_2CH_3	OCF_3	CF_3	CH	N
CH_2CH_3	OCF_3	CF_3	N	CH
CH_2CH_3	OCF_3	CF_3	N	N
CH_2CH_3	OCF_3	OCF_3	CH	N
CH_2CH_3	OCF_3	OCF_3	N	CH
CH_2CH_3	OCF_3	OCF_3	N	N
CH_3	CF_3	CF_3	CH	N
CH_3	CF_3	CF_3	N	CH

CH_3	CF_3	CF_3	N	N
CH_3	CF_3	OCF_3	CH	N
CH_3	CF_3	OCF_3	N	CH
CH_3	CF_3	OCF_3	N	N
CH_3	OCF_3	CF_3	CH	N
CH_3	OCF_3	CF_3	N	CH
CH_3	OCF_3	CF_3	N	N
CH_3	OCF_3	OCF_3	CH	N
CH_3	OCF_3	OCF_3	N	CH
CH_3	OCF_3	OCF_3	N	N

Table 25



X, Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is N; Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Z are CH; Y is N

CH_2CH_3	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
H	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are CH; Z is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are N; Z is CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is CH; Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

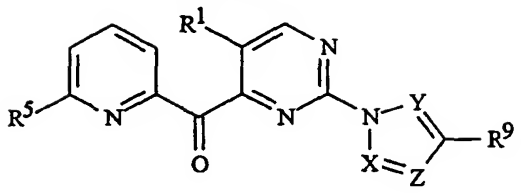
Y is CH; X and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X, Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Table 26



X, Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is N; Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Z are CH; Y is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are CH; Z is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are N; Z is CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is CH; Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

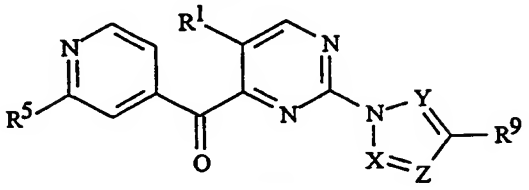
Y is CH; X and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X, Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Table 27



X, Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is N; Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Z are CH; Y is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are CH; Z is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are N; Z is CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is CH; Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

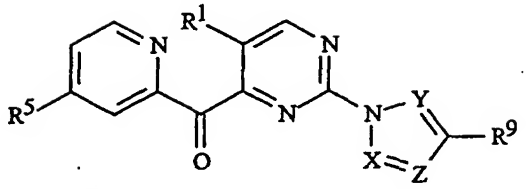
Y is CH; X and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X, Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Table 28



X, Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is N; Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Z are CH; Y is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are CH; Z is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are N; Z is CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is CH; Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

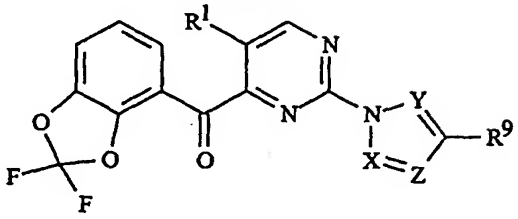
Y is CH; X and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X, Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Table 29



X, Y and Z are CH

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X is N; Y and Z are CH

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X and Z are CH; Y is N

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X and Y are CH; Z is N

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X and Y are N; Z is CH

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X is CH; Y and Z are N

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

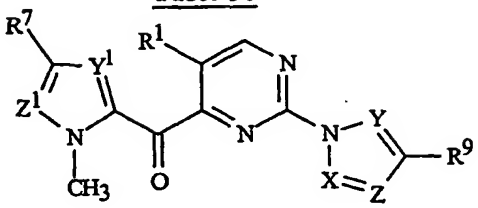
Y is CH; X and Z are N

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

X, Y and Z are N

R^1	R^9	R^1	R^9	R^1	R^9	R^1	R^9
CH_2CH_3	CF_3	CH_3	CF_3	CH_2CH_3	OCF_3	CH_3	OCF_3

Table 30



X is N; Y and Z are CH

R^1	R^7	R^9	Y^1	Z^1
CH_2CH_3	CF_3	CF_3	CH	N
CH_2CH_3	CF_3	CF_3	N	CH
CH_2CH_3	CF_3	CF_3	N	N
CH_2CH_3	CF_3	OCF_3	CH	N
CH_2CH_3	CF_3	OCF_3	N	CH
CH_2CH_3	CF_3	OCF_3	N	N
CH_2CH_3	OCF_3	CF_3	CH	N
CH_2CH_3	OCF_3	CF_3	N	CH
CH_2CH_3	OCF_3	CF_3	N	N

CH_2CH_3	OCF_3	OCF_3	CH	N
CH_2CH_3	OCF_3	OCF_3	N	CH
CH_2CH_3	OCF_3	OCF_3	N	N
CH_3	CF_3	CF_3	CH	N
CH_3	CF_3	CF_3	N	CH
CH_3	CF_3	CF_3	N	N
CH_3	CF_3	OCF_3	CH	N
CH_3	CF_3	OCF_3	N	CH
CH_3	CF_3	OCF_3	N	N
CH_3	OCF_3	CF_3	CH	N
CH_3	OCF_3	CF_3	N	CH
CH_3	OCF_3	CF_3	N	N
CH_3	OCF_3	OCF_3	CH	N
CH_3	OCF_3	OCF_3	N	CH
CH_3	OCF_3	OCF_3	N	N

X and Z are CH; Y is N

R^1	R^7	R^9	Y^1	Z^1
CH_2CH_3	CF_3	CF_3	CH	N
CH_2CH_3	CF_3	CF_3	N	CH
CH_2CH_3	CF_3	CF_3	N	N
CH_2CH_3	CF_3	OCF_3	CH	N
CH_2CH_3	CF_3	OCF_3	N	CH
CH_2CH_3	CF_3	OCF_3	N	N
CH_2CH_3	OCF_3	CF_3	CH	N
CH_2CH_3	OCF_3	CF_3	N	CH
CH_2CH_3	OCF_3	CF_3	N	N
CH_2CH_3	OCF_3	OCF_3	CH	N
CH_2CH_3	OCF_3	OCF_3	N	CH
CH_2CH_3	OCF_3	OCF_3	N	N
CH_3	CF_3	CF_3	CH	N
CH_3	CF_3	CF_3	N	CH
CH_3	CF_3	CF_3	N	N
CH_3	CF_3	OCF_3	CH	N
CH_3	CF_3	OCF_3	N	CH
CH_3	CF_3	OCF_3	N	N
CH_3	OCF_3	CF_3	CH	N
CH_3	OCF_3	CF_3	N	CH

CH_3	OCF_3	CF_3	N	N
CH_3	OCF_3	OCF_3	CH	N
CH_3	OCF_3	OCF_3	N	CH
CH_3	OCF_3	OCF_3	N	N

X and Y are CH; Z is N

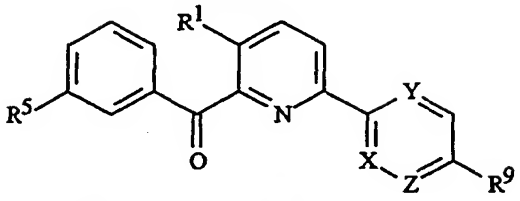
R^1	R^7	R^9	Y^1	Z^1
CH_2CH_3	CF_3	CF_3	CH	N
CH_2CH_3	CF_3	CF_3	N	CH
CH_2CH_3	CF_3	CF_3	N	N
CH_2CH_3	CF_3	OCF_3	CH	N
CH_2CH_3	CF_3	OCF_3	N	CH
CH_2CH_3	CF_3	OCF_3	N	N
CH_2CH_3	OCF_3	CF_3	CH	N
CH_2CH_3	OCF_3	CF_3	N	CH
CH_2CH_3	OCF_3	CF_3	N	N
CH_2CH_3	OCF_3	OCF_3	CH	N
CH_2CH_3	OCF_3	OCF_3	N	CH
CH_2CH_3	OCF_3	OCF_3	N	N
CH_3	CF_3	CF_3	CH	N
CH_3	CF_3	CF_3	N	CH
CH_3	CF_3	CF_3	N	N
CH_3	CF_3	OCF_3	CH	N
CH_3	CF_3	OCF_3	N	CH
CH_3	CF_3	OCF_3	N	N
CH_3	OCF_3	CF_3	CH	N
CH_3	OCF_3	CF_3	N	CH
CH_3	OCF_3	CF_3	N	N
CH_3	OCF_3	OCF_3	CH	N
CH_3	OCF_3	OCF_3	N	CH
CH_3	OCF_3	OCF_3	N	N

X is CH; Y and Z are N

R^1	R^7	R^9	Y^1	Z^1
CH_2CH_3	CF_3	CF_3	CH	N
CH_2CH_3	CF_3	CF_3	N	CH
CH_2CH_3	CF_3	CF_3	N	N
CH_2CH_3	CF_3	OCF_3	CH	N

CH_2CH_3	CF_3	OCF_3	N	CH
CH_2CH_3	CF_3	OCF_3	N	N
CH_2CH_3	OCF_3	CF_3	CH	N
CH_2CH_3	OCF_3	CF_3	N	CH
CH_2CH_3	OCF_3	CF_3	N	N
CH_2CH_3	OCF_3	OCF_3	CH	N
CH_2CH_3	OCF_3	OCF_3	N	CH
CH_2CH_3	OCF_3	OCF_3	N	N
CH_3	CF_3	CF_3	CH	N
CH_3	CF_3	CF_3	N	CH
CH_3	CF_3	CF_3	N	N
CH_3	CF_3	OCF_3	CH	N
CH_3	CF_3	OCF_3	N	CH
CH_3	CF_3	OCF_3	N	N
CH_3	OCF_3	CF_3	CH	N
CH_3	OCF_3	CF_3	N	CH
CH_3	OCF_3	CF_3	N	N
CH_3	OCF_3	OCF_3	CH	N
CH_3	OCF_3	OCF_3	N	CH
CH_3	OCF_3	OCF_3	N	N

Table 31

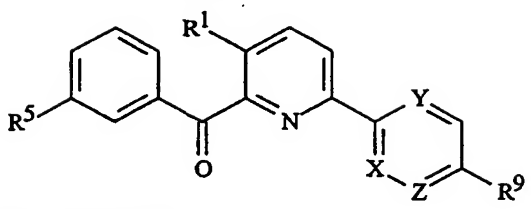


X, Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_2CH_3	OCF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_2CH_3	OCF_3	OCF_3
CH_2CH_3	CF_3	SCF_3	CH_2CH_3	OCF_3	SCF_3
CH_2CH_3	CF_3	$OCHF_2$	CH_2CH_3	OCF_3	$OCHF_2$
CH_2CH_3	CF_3	$SCHF_2$	CH_2CH_3	OCF_3	$SCHF_2$
CH_2CH_3	CF_3	C_2F_5	CH_2CH_3	OCF_3	C_2F_5
CH_2CH_3	CF_3	Cl	CH_2CH_3	OCF_3	Cl
CH_2CH_3	CF_3	SCH_2CH_3	CH_2CH_3	OCF_3	SCH_2CH_3
CH_2CH_3	$OCHF_2$	CF_3	CH_2CH_3	SCF_3	CF_3

CH_2CH_3	$OCHF_2$	OCF_3	CH_2CH_3	SCF_3	OCF_3
CH_2CH_3	$OCHF_2$	SCF_3	CH_2CH_3	SCF_3	SCF_3
CH_2CH_3	$OCHF_2$	$OCHF_2$	CH_2CH_3	SCF_3	$OCHF_2$
CH_2CH_3	$OCHF_2$	$SCHF_2$	CH_2CH_3	SCF_3	$SCHF_2$
CH_2CH_3	$OCHF_2$	C_2F_5	CH_2CH_3	SCF_3	C_2F_5
CH_2CH_3	$OCHF_2$	Cl	CH_2CH_3	SCF_3	Cl
CH_2CH_3	$OCHF_2$	SCH_2CH_3	CH_2CH_3	SCF_3	SCH_2CH_3
CH_2CH_3	$SCHF_2$	CF_3	CH_2CH_3	Cl	CF_3
CH_2CH_3	$SCHF_2$	OCF_3	CH_2CH_3	Cl	OCF_3
CH_2CH_3	$SCHF_2$	SCF_3	CH_2CH_3	Cl	SCF_3
CH_2CH_3	$SCHF_2$	$OCHF_2$	CH_2CH_3	Cl	$OCHF_2$
CH_2CH_3	$SCHF_2$	$SCHF_2$	CH_2CH_3	Cl	$SCHF_2$
CH_2CH_3	$SCHF_2$	C_2F_5	CH_2CH_3	Cl	C_2F_5
CH_2CH_3	$SCHF_2$	Cl	CH_2CH_3	Cl	Cl
CH_2CH_3	$SCHF_2$	SCH_2CH_3	CH_2CH_3	Cl	SCH_2CH_3
CH_3	CF_3	CF_3	CH_3	OCF_3	CF_3
CH_3	CF_3	OCF_3	CH_3	OCF_3	OCF_3
CH_3	CF_3	SCF_3	CH_3	OCF_3	SCF_3
CH_3	CF_3	$OCHF_2$	CH_3	OCF_3	$OCHF_2$
CH_3	CF_3	$SCHF_2$	CH_3	OCF_3	$SCHF_2$
CH_3	CF_3	C_2F_5	CH_3	OCF_3	C_2F_5
CH_3	CF_3	Cl	CH_3	OCF_3	Cl
CH_3	CF_3	SCH_2CH_3	CH_3	OCF_3	SCH_2CH_3
CH_3	$OCHF_2$	CF_3	CH_3	SCF_3	CF_3
CH_3	$OCHF_2$	OCF_3	CH_3	SCF_3	OCF_3
CH_3	$OCHF_2$	SCF_3	CH_3	SCF_3	SCF_3
CH_3	$OCHF_2$	$OCHF_2$	CH_3	SCF_3	$OCHF_2$
CH_3	$OCHF_2$	$SCHF_2$	CH_3	SCF_3	$SCHF_2$
CH_3	$OCHF_2$	C_2F_5	CH_3	SCF_3	C_2F_5
CH_3	$OCHF_2$	Cl	CH_3	SCF_3	Cl
CH_3	$OCHF_2$	SCH_2CH_3	CH_3	SCF_3	SCH_2CH_3
CH_3	$SCHF_2$	CF_3	CH_3	Cl	CF_3
CH_3	$SCHF_2$	OCF_3	CH_3	Cl	OCF_3
CH_3	$SCHF_2$	SCF_3	CH_3	Cl	SCF_3
CH_3	$SCHF_2$	$OCHF_2$	CH_3	Cl	$OCHF_2$
CH_3	$SCHF_2$	$SCHF_2$	CH_3	Cl	$SCHF_2$
CH_3	$SCHF_2$	C_2F_5	CH_3	Cl	C_2F_5
CH_3	$SCHF_2$	Cl	CH_3	Cl	Cl
CH_3	$SCHF_2$	SCH_2CH_3	CH_3	Cl	SCH_2CH_3

Table 32



X is N; Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Z are CH; Y is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are CH; Z is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are N; Z is CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is CH; Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

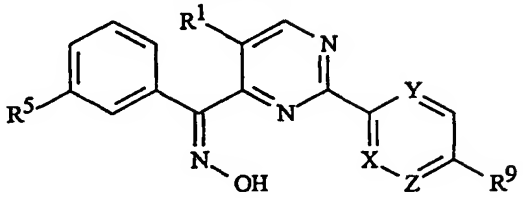
Y is CH; X and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X, Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Table 33



X , Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is N; Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are CH; Z is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are N; Z is CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is CH; Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

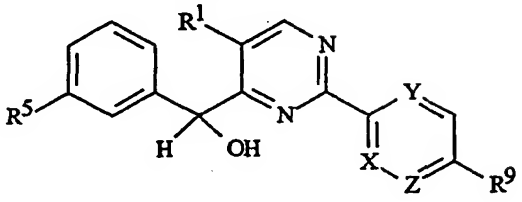
Y is CH; X and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X, Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Table 34



X, Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is N; Y and Z are CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are CH; Z is N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X and Y are N; Z is CH

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X is CH; Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Y is CH; X and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3
CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

X, Y and Z are N

R^1	R^5	R^9	R^1	R^5	R^9
CH_2CH_3	CF_3	CF_3	CH_3	CF_3	CF_3

CH_2CH_3	CF_3	OCF_3	CH_3	CF_3	OCF_3
CH_2CH_3	OCF_3	CF_3	CH_3	OCF_3	CF_3
CH_2CH_3	OCF_3	OCF_3	CH_3	OCF_3	OCF_3

Formulation/Utility

Compounds of this invention will generally be used as a formulation or composition with an agriculturally suitable carrier comprising at least one of a liquid diluent, a solid diluent or a surfactant. The formulation or composition ingredients are selected to be consistent with the physical properties of the active ingredient, mode of application and environmental factors such as soil type, moisture and temperature. Useful formulations include liquids such as solutions (including emulsifiable concentrates), suspensions, emulsions (including microemulsions and/or suspoemulsions) and the like which optionally can be thickened into gels. Useful formulations further include solids such as dusts, powders, granules, pellets, tablets, films, and the like which can be water-dispersible ("wettable") or water-soluble. Active ingredient can be (micro)encapsulated and further formed into a suspension or solid formulation; alternatively the entire formulation of active ingredient can be encapsulated (or "overcoated"). Encapsulation can control or delay release of the active ingredient. Sprayable formulations can be extended in suitable media and used at spray volumes from about one to several hundred liters per hectare. High-strength compositions are primarily used as intermediates for further formulation.

The formulations will typically contain effective amounts of active ingredient, diluent and surfactant within the following approximate ranges which add up to 100 percent by weight.

	Weight Percent		
	Active Ingredient	Diluent	Surfactant
Water-Dispersible and Water-soluble Granules, Tablets and Powders.	5–90	0–94	1–15
Suspensions, Emulsions, Solutions (including Emulsifiable Concentrates)	5–50	40–95	0–15
Dusts	1–25	70–99	0–5
Granules and Pellets	0.01–99	5–99.99	0–15
High Strength Compositions	90–99	0–10	0–2

Typical solid diluents are described in Watkins, et al., *Handbook of Insecticide Dust Diluents and Carriers*, 2nd Ed., Dorland Books, Caldwell, New Jersey. Typical liquid diluents are described in Marsden, *Solvents Guide*, 2nd Ed., Interscience, New York, 1950. *McCutcheon's Detergents and Emulsifiers Annual*, Allured Publ. Corp., Ridgewood, New

Jersey, as well as Sisely and Wood, *Encyclopedia of Surface Active Agents*, Chemical Publ. Co., Inc., New York, 1964, list surfactants and recommended uses. All formulations can contain minor amounts of additives to reduce foam, caking, corrosion, microbiological growth and the like, or thickeners to increase viscosity.

Surfactants include, for example, polyethoxylated alcohols, polyethoxylated alkylphenols, polyethoxylated sorbitan fatty acid esters, dialkyl sulfosuccinates, alkyl sulfates, alkylbenzene sulfonates, organosilicones, *N,N*-dialkyltaurates, lignin sulfonates, naphthalene sulfonate formaldehyde condensates, polycarboxylates, and polyoxyethylene/polyoxypropylene block copolymers. Solid diluents include, for example, clays such as bentonite, montmorillonite, attapulgite and kaolin, starch, sugar, silica, talc, diatomaceous earth, urea, calcium carbonate, sodium carbonate and bicarbonate, and sodium sulfate. Liquid diluents include, for example, water, *N,N*-dimethylformamide, dimethyl sulfoxide, *N*-alkylpyrrolidone, ethylene glycol, polypropylene glycol, paraffins, alkylbenzenes, alkylnaphthalenes, oils of olive, castor, linseed, tung, sesame, corn, peanut, cotton-seed, soybean, rape-seed and coconut, fatty acid esters, ketones such as cyclohexanone, 2-heptanone, isophorone and 4-hydroxy-4-methyl-2-pentanone, and alcohols such as methanol, cyclohexanol, decanol and tetrahydrofurfuryl alcohol.

Solutions, including emulsifiable concentrates, can be prepared by simply mixing the ingredients. Dusts and powders can be prepared by blending and, usually, grinding as in a hammer mill or fluid-energy mill. Suspensions are usually prepared by wet-milling; see, for example, U.S. 3,060,084. Granules and pellets can be prepared by spraying the active material upon preformed granular carriers or by agglomeration techniques. See Browning, "Agglomeration", *Chemical Engineering*, December 4, 1967, pp 147-48, *Perry's Chemical Engineer's Handbook*, 4th Ed., McGraw-Hill, New York, 1963, pages 8-57 and following, and WO 91/13546. Pellets can be prepared as described in U.S. 4,172,714. Water-dispersible and water-soluble granules can be prepared as taught in U.S. 4,144,050, U.S. 3,920,442 and DE 3,246,493. Tablets can be prepared as taught in U.S. 5,180,587, U.S. 5,232,701 and U.S. 5,208,030. Films can be prepared as taught in GB 2,095,558 and U.S. 3,299,566.

For further information regarding the art of formulation, see U.S. 3,235,361, Col. 6, line 16 through Col. 7, line 19 and Examples 10-41; U.S. 3,309,192, Col. 5, line 43 through Col. 7, line 62 and Examples 8, 12, 15, 39, 41, 52, 53, 58, 132, 138-140, 162-164, 166, 167 and 169-182; U.S. 2,891,855, Col. 3, line 66 through Col. 5, line 17 and Examples 1-4; Klingman, *Weed Control as a Science*, John Wiley and Sons, Inc., New York, 1961, pp 81-96; and Hance et al., *Weed Control Handbook*, 8th Ed., Blackwell Scientific Publications, Oxford, 1989.

In the following Examples, all percentages are by weight and all formulations are prepared in conventional ways. Compound numbers refer to compounds in Index Tables A.

Example A

High Strength Concentrate

Compound 1	98.5%
silica aerogel	0.5%
synthetic amorphous fine silica	1.0%.

Example B

Wettable Powder

Compound 1	65.0%
dodecylphenol polyethylene glycol ether	2.0%
sodium ligninsulfonate	4.0%
sodium silicoaluminate	6.0%
montmorillonite (calcined)	23.0%.

Example C

Granule

Compound 1	10.0%
attapulgite granules (low volatile matter, 0.71/0.30 mm; U.S.S. No. 25–50 sieves)	90.0%.

Example D

Extruded Pellet

Compound 1	25.0%
anhydrous sodium sulfate	10.0%
crude calcium ligninsulfonate	5.0%
sodium alkylnaphthalenesulfonate	1.0%
calcium/magnesium bentonite	59.0%.

Test results indicate that the compounds of the present invention are highly active preemergent and postemergent herbicides or plant growth regulants. Many of them have utility for broad-spectrum pre- and/or postemergence weed control in areas where complete control of all vegetation is desired such as around fuel storage tanks, industrial storage areas, parking lots, drive-in theaters, air fields, river banks, irrigation and other waterways, around billboards and highway and railroad structures. Some of the compounds are useful for the control of selected grass and broadleaf weeds with tolerance to important agronomic crops which include but are not limited to alfalfa, barley, cotton, wheat, rape, sugar beets, corn (maize), sorghum, soybeans, rice, oats, peanuts, vegetables, tomato, potato, perennial plantation crops including coffee, cocoa, oil palm, rubber, sugarcane, citrus, grapes, fruit trees, nut trees, banana, plantain, pineapple, hops, tea and forests such as eucalyptus and conifers (e.g., loblolly pine), and turf species (e.g., Kentucky bluegrass, St. Augustine grass, Kentucky fescue and Bermuda grass). Those skilled in the art will appreciate that not all

compounds are equally effective against all weeds. Alternatively, the subject compounds are useful to modify plant growth.

A herbicidally effective amount of the compounds of this invention is determined by a number of factors. These factors include: formulation selected, method of application, amount and type of vegetation present, growing conditions, etc. In general, a herbicidally effective amount of compounds of this invention is 0.001 to 20 kg/ha with a preferred range of 0.004 to 1.0 kg/ha. One skilled in the art can easily determine the herbicidally effective amount necessary for the desired level of weed control.

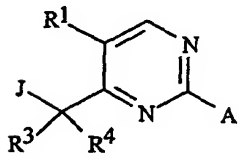
Compounds of this invention can be used alone or in combination with other commercial herbicides, insecticides or fungicides. Compounds of this invention can also be used in combination with commercial herbicide safeners such as benoxacor, dichlormid and furilazole to increase safety to certain crops. A mixture of one or more of the following herbicides with a compound of this invention may be particularly useful for weed control: acetochlor, acifluorfen and its sodium salt, aclonifen, acrolein (2-propenal), alachlor, ametryn, amidosulfuron, amitrole, ammonium sulfamate, anilofos, asulam, atrazine, azafenidin, azimsulfuron, benazolin, benazolin-ethyl, benfluralin, benfuresate, bensulfuron-methyl, bensulide, bentazone, bifenox, bispyribac and its sodium salt, bromacil, bromoxynil, bromoxynil octanoate, butachlor, butralin, butroxydim (ICIA0500), butylate, caloxydim (BAS 620H), carfentrazone-ethyl, chlomethoxyfen, chloramben, chlorbromuron, chloridazon, chlorimuron-ethyl, chlornitrofen, chlorotoluron, chlorpropham, chlorsulfuron, chlorthal-dimethyl, cinmethylin, cinosulfuron, clethodim, clomazone, clopyralid, clopyralid-olamine, cyanazine, cycloate, cyclosulfamuron, 2,4-D and its butotyl, butyl, isoctyl and isopropyl esters and its dimethylammonium, diolamine and trolamine salts, daimuron, dalapon, dalapon-sodium, dazomet, 2,4-DB and its dimethylammonium, potassium and sodium salts, desmedipham, desmetryn, dicamba and its diglycolammonium, dimethylammonium, potassium and sodium salts, dichlobenil, dichlorprop, diclofop-methyl, 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1*H*-imidazol-2-yl]-5-methyl-3-pyridine-carboxylic acid (AC 263,222), difenzoquat metilsulfate, diflufenican, dimepiperate, dimethenamid, dimethylarsinic acid and its sodium salt, dinitramine, diphenamid, diquat dibromide, dithiopyr, diuron, DNOC, endothal, EPTC, esprocarb, ethalfluralin, ethametsulfuron-methyl, ethofumesate, ethoxysulfuron, fenoxaprop-ethyl, fenoxaprop-P-ethyl, fenuron, fenuron-TCA, flamprop-methyl, flamprop-M-isopropyl, flamprop-M-methyl, flazasulfuron, fluazifop-butyl, fluazifop-P-butyl, fluchloralin, flumetsulam, flumiclorac-pentyl, flumioxazin, fluometuron, fluoroglycofen-ethyl, flupoxam, flupyrsulfuron-methyl and its sodium salt, fluridone, flurochloridone, fluroxypyr, fluthiacet-methyl, fomesafen, fosamine-ammonium, glufosinate, glufosinate-ammonium, glyphosate, glyphosate-isopropylammonium, glyphosate-sesquisodium, glyphosate-trimesium, halosulfuron-methyl, haloxyfop-etotyl, haloxyfop-methyl,

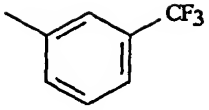
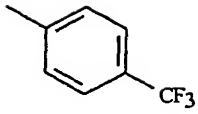
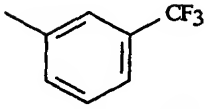
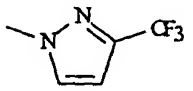
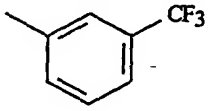
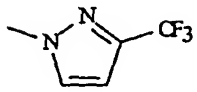
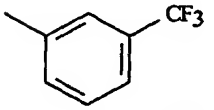
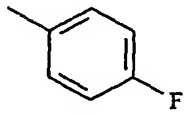
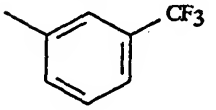
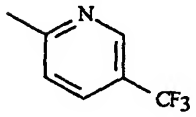
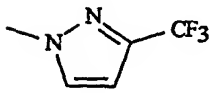
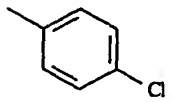
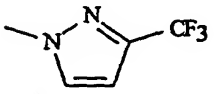
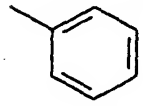
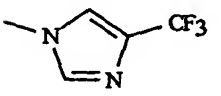
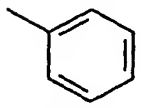
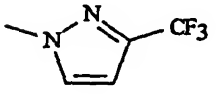
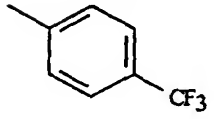
hexazinone, imazamethabenz-methyl, imazamox, imazapyr, imazaquin, imazaquin-ammonium, imazethapyr, imazethapyr-ammonium, imazosulfuron, ioxynil, ioxynil octanoate, ioxynil-sodium, isoproturon, isouron, isoxaben, isoxaflutole, lactofen, lenacil, linuron, maleic hydrazide, MCPA and its dimethylammonium, potassium and sodium salts, MCPA-isoctyl, mecoprop, mecoprop-P, mefenacet, mefluidide, metam-sodium, methabenzthiazuron, methylarsonic acid and its calcium, monoammonium, monosodium and disodium salts, methyl [[[1-[5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrophenyl]-2-methoxyethylidene]amino]oxy]acetate (AKH-7088), methyl 5-[[[[(4,6-dimethyl-2-pyrimidinyl)amino]carbonyl]amino]sulfonyl]-1-(2-pyridinyl)-1*H*-pyrazole-4-carboxylate (*NC-330*), metobenzuron, metolachlor, metosulam, metoxuron, metribuzin, metsulfuron-methyl, molinate, monolinuron, napropamide, naptalam, neburon, nicosulfuron, norflurazon, oryzalin, oxadiazon, oxasulfuron, oxyfluorfen, paraquat dichloride, pebulate, pendimethalin, pentoxazone (KPP-314), perfluidone, phenmedipham, picloram, picloram-potassium, pretilachlor, primisulfuron-methyl, prometon, prometryn, propachlor, propanil, propaquizafop, propazine, propham, propyzamide, prosulfuron, pyrazolynate, pyrazosulfuron-ethyl, pyridate, pyriminobac-methyl, pyrithiobac, pyrithiobac-sodium, quinclorac, quizalofop-ethyl, quizalofop-P-ethyl, quizalofop-P-tefuryl, rimsulfuron, sethoxydim, siduron, simazine, sulcotrione (ICIA0051), sulfentrazone, sulfometuron-methyl, TCA, TCA-sodium, tebuthiuron, terbacil, terbuthylazine, terbutryn, thenylchlor, thiafluamide (BAY 11390), thifensulfuron-methyl, thiobencarb, tralkoxydim, tri-allate, triasulfuron, triaziflam, tribenuron-methyl, triclopyr, triclopyr-butotyl, triclopyr-triethylammonium, tridiphane, trifluralin, triflusulfuron-methyl, and vernolate.

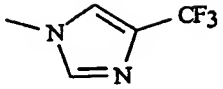
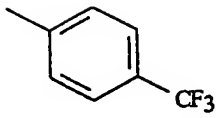
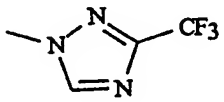
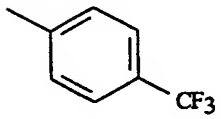
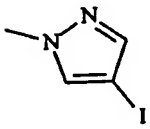
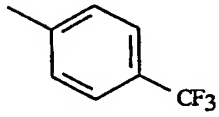
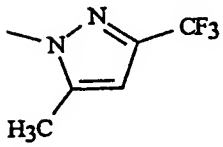
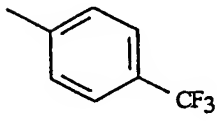
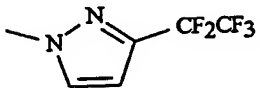
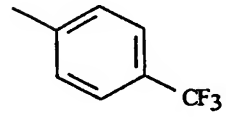
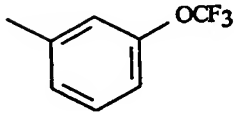
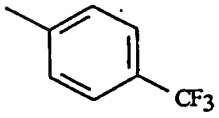
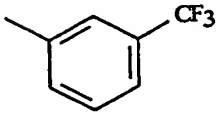
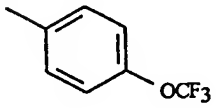
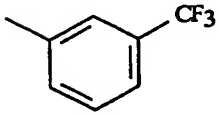
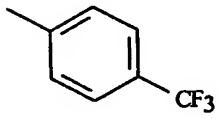
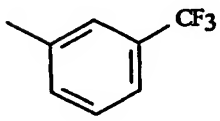
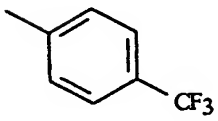
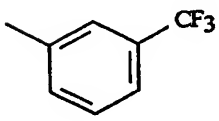
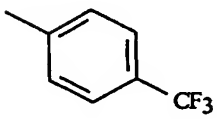
In certain instances, combinations with other herbicides having a similar spectrum of control but a different mode of action will be particularly advantageous for preventing the development of resistant weeds.

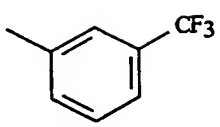
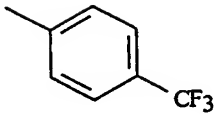
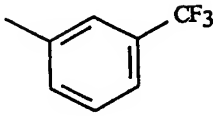
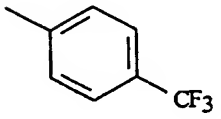
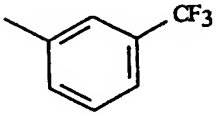
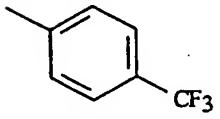
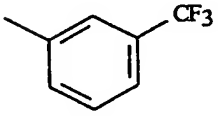
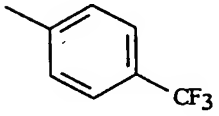
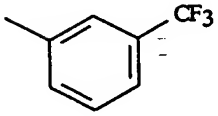
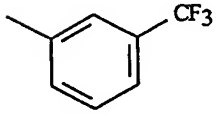
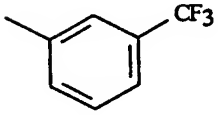
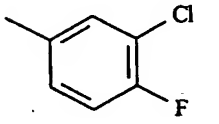
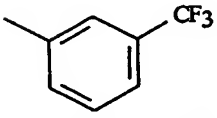
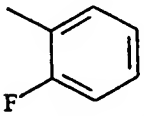
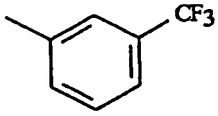
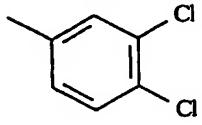
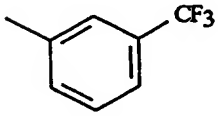
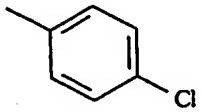
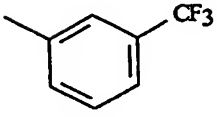
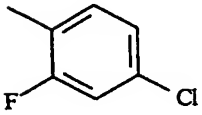
The following Tests demonstrate the control efficacy of the compounds of this invention against specific weeds. The weed control afforded by the compounds is not limited, however, to these species. See Index Tables A-D for compound descriptions. The abbreviation "Ex." stands for "Example" and is followed by a number indicating in which example the compound is prepared.

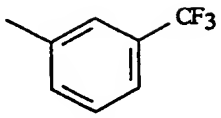
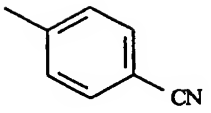
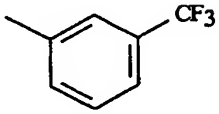
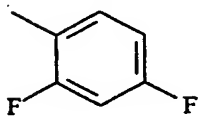
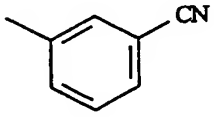
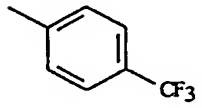
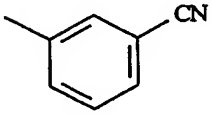
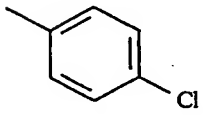
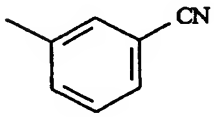
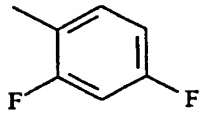
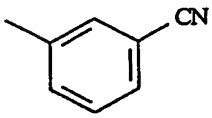
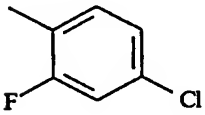
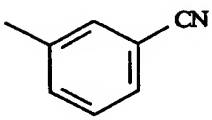
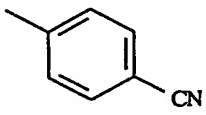
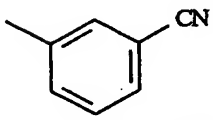
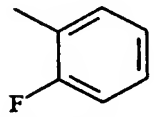
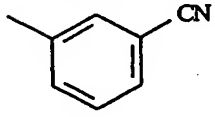
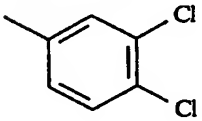
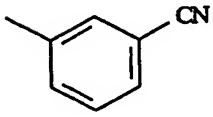
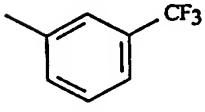
INDEX TABLE A

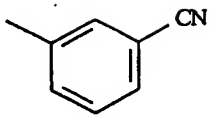
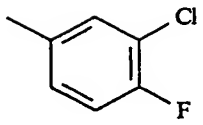
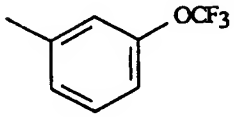
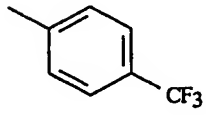
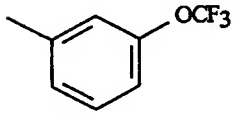
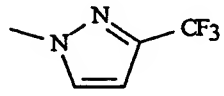
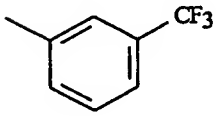
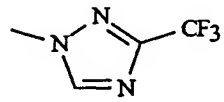
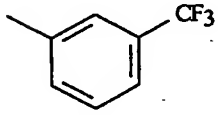
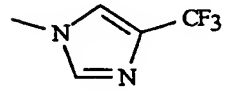
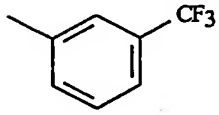
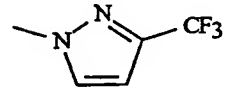
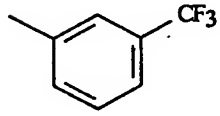
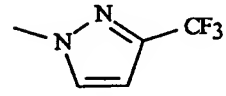
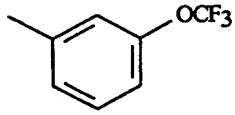
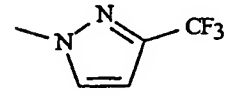
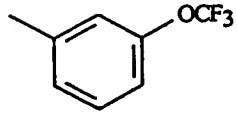
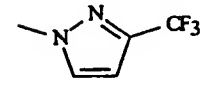
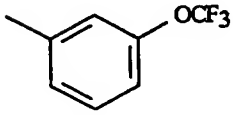
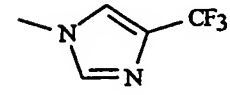


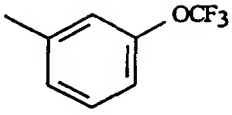
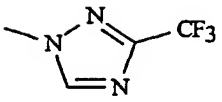
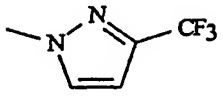
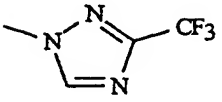
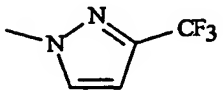
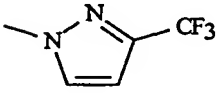
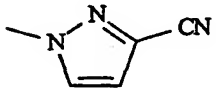
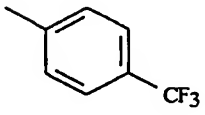
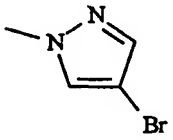
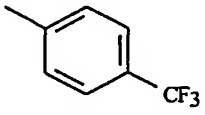
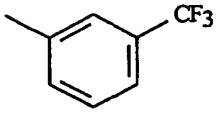
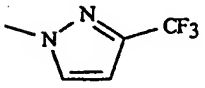
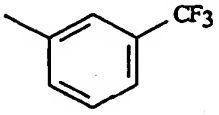
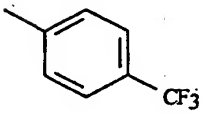
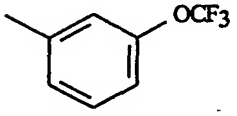
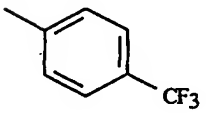
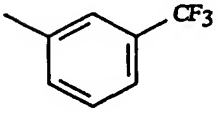
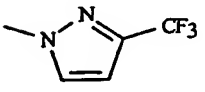
Cmpd	J	R^1	R^3	R^4	A	mp (°C)
1 (Ex. 1)		CH_3	H	H		112-113
2 (Ex. 2)		CH_3	H	H		90-92 *
3		H	H	H		oil*
4		CH_3	H	H		82-91
5		CH_3	H	H		98-100
6		CH_3	H	H		112-114
7		CH_3	H	H		84-89
8		CH_3	H	H		solid*
9 (Ex. 3)		CH_3	H	H		112-114

10		CH_3	H	H		134-142
11		CH_3	H	H		121-128
12		CH_3	H	H		157-160
13		CH_3	H	H		121-123
14		CH_3	H	H		114-116
15		CH_3	H	H		71-76
16		CH_3	H	H		58-66
17		CH_3	CN	H		156-157
18		CH_3	$COOCH_3$	H		127-129
19		CH_3	CH_3	H		102-104

20		CH_3	H	OCH_3		78-82
21		CH_3	Cl	H		105-109
22		CH_2CH_3	H	H		73-75
23		OCH_3	H	H		92-93
24		CH_3	H	H		65-67
25		CH_3	H	H		72-74
26		CH_3	H	H		58-60
27		CH_3	H	H		75-77
28		CH_3	H	H		93-95
29		CH_3	H	H		78-80

30		CH_3	H	H		128-132
31		CH_3	H	H		48-50
32		CH_3	H	H		152-154
33		CH_3	H	H		150-152
34		CH_3	H	H		145-146
35		CH_3	H	H		137-138
36		CH_3	H	H		164
37		CH_3	H	H		114-115
38		CH_3	H	H		134-136
39		CH_3	H	H		131-132

40		CH_3	H	H		135-138
41		CH_2CH_3	H	H		59-61
42		CH_3	H	H		72-74
43		CH_3	H	H		103-104
44		CH_3	H	H		89-94
45		OCH_3	H	H		80-85
46		CH_2CH_3	H	H		76-77
47		CH_2CH_3	H	H		oil*
48		$CH_2CH_2CH_3$	H	H		
49		CH_2CH_3	H	H		oil*

50		CH_2CH_3	H	H		oil*
51		CH_3	H	H		104-106
52		CH_3	H	H		93-97
53		CH_3	H	H		150-152
54		CH_3	H	H		139-141
55		CH_3	H	H		100-102
56		$CH_3CH_3CH_3$	H	H		81-84
57		$CH_3CH_3CH_3$	H	H		63-65
58		$CH_3CH_3CH_3$	H	H		oil*

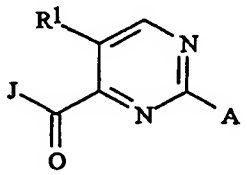
*See Index Table B for ^{1}H NMR data.

INDEX TABLE B

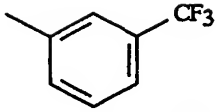
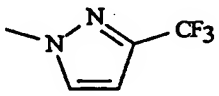
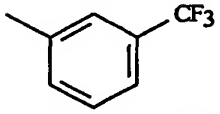
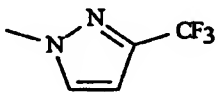
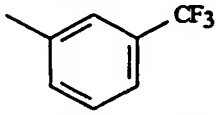
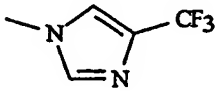
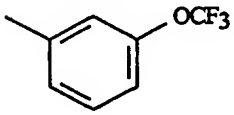
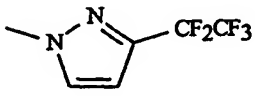
Cmpd No.	^{1}H NMR Data ($CDCl_3$ solution unless indicated otherwise)[a]
2	δ 8.55 (t, 2H), 7.55-7.50 (m, 2H), 7.45-7.40 (m, 2H), 6.72 (d, 1H), 4.26 (s, 2H), 2.32 (s, 3H).

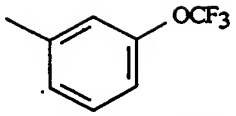
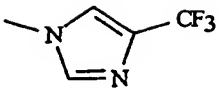
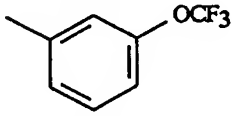
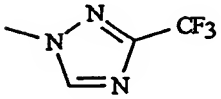
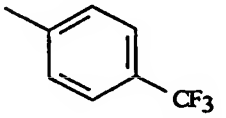
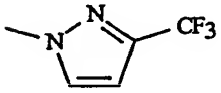
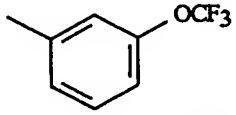
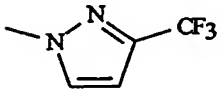
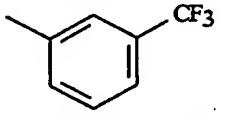
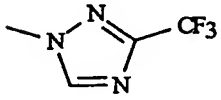
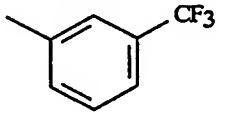
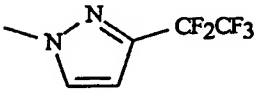
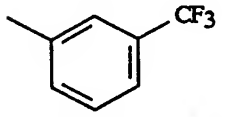
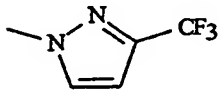
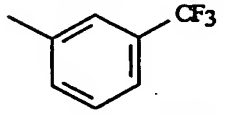
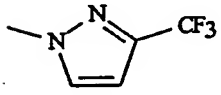
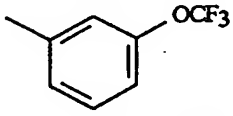
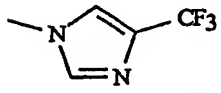
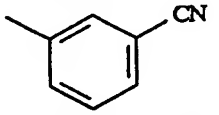
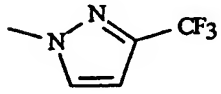
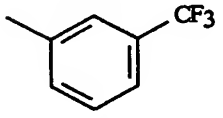
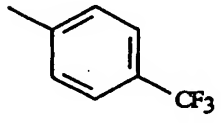
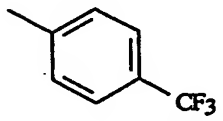
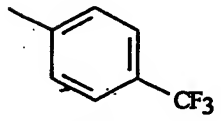
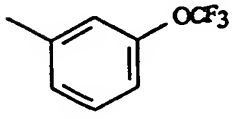
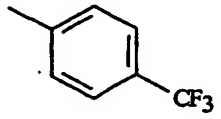
3	δ 8.70 (d, 1H), 8.65 (d, 1H), 7.60-7.55 (m, 2H), 7.50-7.45 (m, 2H), 7.05 (d, 1H), 6.75 (d, 1H), 4.28 (s, 2H).
8	δ 8.62 (s, 1H), 8.27 (m, 2H), 7.7 (s, 1H), 7.47 (m, 3H), 7.4 (s, 1H), 5.28 (s, 2H), 2.36 (s, 3H).
47	δ 8.59 (m, 2H), 7.40-7.10 (m, 4H), 6.71 (d, 1H), 4.24 (s, 2H), 2.70 (q, 2H), 1.20 (t, 3H).
48	δ 8.56 (s, 2H), 7.34 (t, 1H), 7.15 (m, 3H), 6.72 (m, 1H), 4.24 (s, 2H), 2.65 (t, 2H), 1.57 (m, 2H), 0.98 (t, 3H).
49	δ 8.65 (s, 1H), 8.47 (s, 1H), 8.17 (s, 1H), 7.40-7.15 (m, 4H), 4.20 (s, 2H), 2.70 (q, 2H), 1.25 (t, 3H).
50	δ 9.20 (s, 1H), 8.60 (s, 1H), 7.41 (t, 1H), 7.15 (m, 3H), 4.25 (s, 2H), 2.80 (q, 2H), 1.24 (t, 3H.).
58	δ 8.57 (s, 1H), 8.54 (m, 1H), 7.53 (m, 2H), 7.43 (m, 2H), 6.71 (d, 1H), 4.28 (s, 2H), 2.65 (t, 2H), 1.61 (m, 2H), 0.98 (t, 3H).

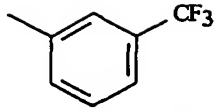
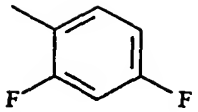
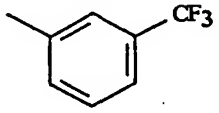
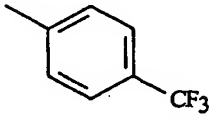
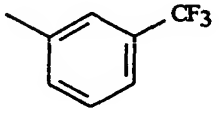
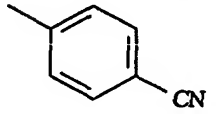
INDEX TABLE C



5

Cmpd	J	R^1	A	mp(°C)
59 (Ex. 4)		CH_3		113-116
60		OCH_3		183-185
61		CH_3		80-82
62		CH_3		85-87

63		CH_3		oil*
64		CH_3		120-123
65		CH_3		144-146
66		CH_3		85-88
67		CH_3		oil*
68		CH_3		79-85
69		CH_2CH_3		95-99
70		H		oil*
71		CH_2CH_3		oil*
72		CH_2CH_3		150-153
73 (Ex. 5)		CH_3		159-161
74		CH_3		155-157
75		CH_3		122-123

76		H		62-64
77		H		96-100
78		H		122-124

*See Index Table D for ^{1}H NMR data.

INDEX TABLE D

Cmpd No.	^{1}H NMR Data ($CDCl_3$ solution unless indicated otherwise)[a]
63	δ 8.77 (s, 1H), 8.57 (s, 1H), 8.17 (s, 1H), 7.77-7.85 (m, 2H), 7.50-7.60 (m, 2H), 2.42 (s, 3H).
67	δ (s, 1H), 8.93 (s, 1H), 8.25 (s, 1H), 8.07 (d, 1H), 7.97 (d, 1H), 7.68 (m, 1H), 2.48 (s, 3H).
70	δ 9.13 (d, 1H), 8.60 (m, 2H), 8.42 (d, 1H), 7.91 (m, 2H), 7.72 (t, 1H), 6.70 (d, 1H).
71	δ 8.81 (s, 1H), 8.58 (s, 1H), 8.18 (s, 1H), 7.81 (s, 1H), 7.77 (m, 1H), 7.57 (m, 2H), 2.77 (q, 2H), 1.28 (t, 3H).

[a] ^{1}H NMR data are in ppm downfield from tetramethylsilane. Couplings are designated by (s)-singlet, (d)-doublet, (t)-triplet, (q)-quartet, (m)-multiplet, (dd)-doublet of doublets, (dt)-doublet of triplets, (br s)-broad singlet.

BIOLOGICAL EXAMPLES OF THE INVENTION

TEST A

Seeds of barnyardgrass (*Echinochloa crus-galli*), crabgrass (*Digitaria spp.*), morningglory (*Ipomoea spp.*), and velvetleaf (*Abutilon theophrasti*) were planted into a sandy loam soil and treated preemergence by soil drench with test chemicals formulated in a non-phytotoxic solvent mixture which includes a surfactant. At the same time, these crop and weed species were also treated postemergence sprayed to runoff, with test chemicals formulated in the same manner.

Plants ranged in height from two to eighteen cm and were in the one to two leaf stage for the postemergence treatment. Treated plants and untreated controls were maintained in a greenhouse for approximately eleven days, after which all treated plants were compared to untreated controls and visually evaluated for injury. Plant response ratings, summarized in Table A, are based on a 0 to 10 scale where 0 is no effect and 10 is complete control. A dash (-) response means no test results.

TABLE A	COMPOUND								
Rate 2000 g/ha	1	6	8	12	13	59	65	73	74
PRE SOIL DRENCH									
Barnyardgrass	10	8	7	7	9	10	5	9	1
Crabgrass	10	9	10	9	10	10	8	10	7
Morningglory	8	5	8	3	3	9	4	9	1
Velvetleaf	9	8	3	5	9	10	4	9	4

TABLE A	COMPOUND
Rate 1000 g/ha	8
PRE SOIL DRENCH	
Barnyardgrass	4
Crabgrass	9
Morningglory	9
Velvetleaf	2

TABLE A	COMPOUND								
Rate 1000 g/ha	1	6	8	12	13	59	65	73	74
SPRAYED TO RUNOFF									
Barnyardgrass	9	8	3	5	6	9	4	8	5
Crabgrass	9	9	5	8	9	9	5	9	8
Morningglory	9	6	7	2	2	8	10	9	10
Velvetleaf	9	9	2	6	8	9	5	9	5

TABLE A	COMPOUND
Rate 500 g/ha	8
SPRAYED TO RUNOFF	
Barnyardgrass	3
Crabgrass	8
Morningglory	3
Velvetleaf	1

TEST B

Seeds of bedstraw (*Galium aparine*), blackgrass (*Alopecurus myosuroides*), broadleaf signalgrass (*Brachiaria decumbens*), cocklebur (*Xanthium strumarium*), corn (*Zea mays*), crabgrass (*Digitaria sanguinalis*), giant foxtail (*Setaria faberii*), lambsquarters (*Chenopodium album*), morningglory (*Ipomoea hederacea*), pigweed (*Amaranthus retroflexus*), rape (*Brassica napus*), soybean (*Glycine max*), sugar beet (*Beta vulgaris*), velvetleaf (*Abutilon theophrasti*), wheat (*Triticum aestivum*), wild oat (*Avena fatua*) and purple nutsedge (*Cyperus rotundus*) tubers were planted and treated preemergence with test chemicals formulated in a non-phytotoxic solvent mixture which included a surfactant.

At the same time, these crop and weed species were also treated with postemergence applications of test chemicals formulated in the same manner. Plants ranged in height from 2 to 18 cm (1- to 4-leaf stage) for postemergence treatments. Plant species in the flood test consisted of rice (*Oryza sativa*), smallflower flatsedge (*Cyperus difformis*), duck salad (*Heteranthera limosa*) and barnyardgrass (*Echinochloa crus-galli*) grown to the 2-leaf stage for testing. Treated plants and controls were maintained in a greenhouse for twelve to sixteen days, after which all species were compared to controls and visually evaluated. Plant response ratings, summarized in Table B, are based on a scale of 0 to 10 where 0 is no effect and 10 is complete control. A dash (-) response means no test result.

TABLE B	COMPOUND																													
Rate 500 g/ha	1	2	3	4	5	6	7	9	10	11	12	13	14	16	32	52	53	54	59	61	62	63	64	65	66	67	68	73	74	
Postemergence																														
B. signalgrass	9	-	3	3	5	-	1	9	3	7	7	8	4	1	-	9	2	5	3	5	3	5	8	1	5	9	5	8	2	
Barnyardgrass	-	6	6	8	3	3	2	8	4	-	3	3	6	4	4	8	2	4	8	4	4	3	5	0	4	6	4	4	0	
Bedstraw	10	9	9	9	9	8	3	10	10	10	10	10	10	5	-	10	10	9	9	9	4	8	9	7	8	10	10	9	6	
Blackgrass	9	9	3	7	5	2	1	9	3	5	4	5	3	3	-	9	6	3	6	8	4	6	9	0	6	10	5	9	1	
Cocklebur	10	9	6	-	8	7	-	9	9	9	8	9	7	6	-	9	6	9	8	8	7	8	9	2	5	9	7	8	5	
Corn	7	7	3	4	4	3	2	5	3	3	3	4	3	1	-	7	1	3	4	4	2	2	5	1	3	7	2	3	1	
Crabgrass	9	10	3	9	8	9	2	10	6	7	3	9	4	7	-	9	4	5	9	9	8	6	9	1	10	10	8	9	3	
Ducksalad	-	2	6	5	2	6	2	6	5	-	2	3	3	2	6	9	7	3	7	5	2	6	9	0	7	8	3	3	0	
Giant foxtail	9	10	5	8	6	6	1	9	5	9	4	5	3	3	-	9	2	4	9	9	3	3	5	1	4	9	3	9	1	
Morningglory	10	9	8	9	4	8	5	10	9	-	9	9	8	1	-	10	3	10	10	9	10	10	8	10	10	10	10	10	7	
Nutsedge	2	2	0	0	0	3	0	3	3	-	0	0	0	1	-	7	-	0	0	-	-	-	2	-	1	-	-	-	-	
Rape	9	10	7	10	10	8	7	10	9	10	9	9	7	5	-	10	9	9	7	9	3	8	4	2	7	9	7	10	3	
Redroot pigweed	10	9	9	10	9	9	7	10	9	10	9	10	9	9	-	10	7	7	9	9	10	9	10	7	10	10	10	10	8	
Rice	-	6	6	7	3	3	0	8	3	-	3	1	5	4	2	7	2	4	6	2	0	1	3	0	2	4	3	3	0	
S. Flatsedge	-	9	9	8	5	7	4	9	9	-	8	5	9	3	7	9	9	9	9	9	8	9	9	0	9	9	7	3	0	
Soybean	9	8	8	8	6	6	5	9	8	9	5	5	5	4	-	9	7	4	9	6	2	2	6	2	7	8	7	6	3	
Sugarbeets	10	9	9	10	10	9	8	9	9	10	9	10	9	9	-	10	10	9	9	10	9	9	10	8	10	9	10	9	7	
Velvetleaf	9	9	4	9	9	8	2	9	9	9	8	8	4	2	-	9	7	3	8	8	3	8	9	2	8	8	8	10	2	
Wheat	5	5	3	2	4	3	0	6	3	3	4	4	3	1	-	8	2	2	3	4	3	2	5	2	3	6	4	6	2	
Wild oats	9	7	3	3	5	3	0	8	3	5	5	4	3	1	-	9	2	3	6	5	3	2	7	1	3	8	3	9	1	

TABLE B	COMPOUND																													
Rate 500 g/ha	1	2	3	4	5	6	7	9	10	11	12	13	14	16	52	53	54	59	61	62	63	64	65	66	67	68	73	74	75	
Preemergence																														
B. signalgrass	9	-	5	-	9	9	0	10	4	8	9	9	5	7	10	6	6	9	9	9	9	10	2	10	10	10	10	0	9	
Bedstraw	9	10	5	8	7	5	0	9	10	9	8	6	2	1	10	8	4	8	9	6	8	9	0	8	10	6	10	0	8	
Blackgrass	10	10	10	10	7	4	0	10	3	5	6	9	3	4	10	2	4	9	8	5	9	9	0	10	9	7	10	0	10	
Cocklebur	10	3	0	1	-	0	0	9	3	-	3	7	-	0	10	1	0	2	10	0	1	7	0	3	5	8	-	0	9	
Corn	2	2	1	2	1	0	0	4	1	0	2	2	3	0	8	0	1	3	2	2	2	4	0	3	7	1	2	0	2	
Crabgrass	10	10	5	10	9	10	2	10	9	10	10	10	8	8	10	8	8	10	10	10	9	10	0	9	10	10	10	1	10	
Giant foxtail	10	10	10	10	10	10	5	10	9	10	9	10	9	8	10	6	10	10	10	4	8	6	0	4	10	10	10	0	9	

Morningglory	10	10	10	8	9	2	0	10	10	10	10	10	8	1	10	5	2	10	10	7	10	10	5	9	10	9	10	0	10
Nutsedge	1	0	5	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	-	0	0	2	0	0	0	0	0	0	0
Rape	10	10	7	9	10	7	0	10	7	10	6	9	8	1	10	7	3	10	9	3	8	10	0	8	10	8	10	0	4
Redroot pigweed	10	10	10	10	10	6	2	10	7	10	9	9	4	8	10	8	9	10	10	10	10	10	0	10	10	10	10	0	10
Soybean	5	5	2	3	3	0	0	4	1	2	3	3	1	0	9	0	0	4	2	1	0	1	0	1	8	2	2	0	1
Sugarbeets	10	10	10	10	10	10	1	10	10	10	10	10	9	9	10	9	9	10	10	10	10	10	0	10	10	10	10	0	10
Velvetleaf	10	10	6	7	9	3	0	9	8	10	4	10	7	1	10	8	1	10	10	7	10	10	1	8	10	8	8	0	10
Wheat	9	3	0	5	3	0	0	6	1	3	0	1	0	0	6	1	1	5	4	0	4	2	0	3	4	4	9	0	5
Wild oats	10	10	9	9	8	3	0	9	4	6	4	9	2	3	10	1	4	9	8	4	8	9	0	5	9	8	10	0	9

TABLE B											COMPOUND																		
Rate 250 g/ha	1	2	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Postemergence																													
B. signalgrass	8	-	3	2	4	-	1	9	3	4	7	7	3	8	1	7	3	2	3	7	7	9	3	3	2	5	9	5	2
Barnyardgrass	-	5	6	8	3	2	1	7	3	-	3	3	5	9	4	6	2	3	0	4	6	6	4	5	2	3	5	4	4
Bedstraw	9	9	8	9	9	7	3	10	10	10	10	10	8	9	4	9	9	3	4	9	8	9	10	10	6	9	8	9	6
Blackgrass	9	7	3	6	5	2	-	8	3	7	4	5	3	9	2	7	2	1	3	6	9	9	4	8	1	5	8	5	1
Cocklebur	9	8	5	7	8	7	-	10	9	9	8	9	7	10	5	8	8	3	7	8	8	10	10	9	3	9	8	8	8
Corn	4	6	3	3	2	3	2	5	3	3	3	3	3	5	1	3	2	3	3	4	4	3	1	3	1	3	4	3	2
Crabgrass	9	9	3	9	4	8	2	10	4	6	3	7	2	9	2	4	3	2	3	8	9	9	8	10	1	6	10	9	7
Ducksalad	-	2	3	2	1	0	0	7	3	-	1	2	2	7	1	5	2	7	0	5	6	6	3	6	0	2	6	4	5
Giant foxtail	9	9	3	7	4	5	1	9	4	5	3	4	1	8	1	5	1	1	3	9	8	9	3	8	1	4	9	4	2
Morningglory	10	9	7	8	3	8	2	10	7	10	9	9	6	9	1	8	8	6	4	9	10	9	10	10	3	8	3	10	9
Nutsedge	1	-	0	0	0	2	0	3	0	1	0	0	0	2	0	0	0	0	0	3	-	-	-	2	-	-	-	-	2
Rape	9	9	6	10	10	8	6	10	9	10	9	9	6	9	2	8	9	3	5	10	10	10	10	10	6	9	10	9	10
Redroot pigweed	10	9	9	10	9	9	7	10	9	10	9	10	9	9	8	10	9	7	8	10	10	10	10	10	8	10	10	10	9
Rice	-	5	4	6	2	2	0	7	2	-	3	0	5	7	3	6	0	2	0	5	5	5	2	5	0	1	3	3	2
S. Flatsedge	-	8	9	7	5	7	2	9	9	-	8	4	8	9	2	5	2	6	0	9	9	9	3	7	2	5	8	8	8
Soybean	9	8	7	8	5	6	3	10	8	8	5	5	5	9	4	8	6	4	6	6	8	8	6	7	5	7	7	7	6
Sugarbeets	10	9	9	9	10	8	8	10	9	10	8	10	8	10	9	10	9	6	7	10	10	10	10	10	8	10	10	10	10
Velvetleaf	9	9	3	8	7	8	1	10	8	8	8	8	4	8	2	7	7	2	7	9	9	9	7	9	2	7	8	4	8
Wheat	3	3	2	2	3	2	0	4	3	3	3	3	2	6	0	4	3	0	3	5	6	5	3	4	0	4	5	4	2
Wild oats	7	6	2	3	4	3	0	6	2	3	4	4	3	9	1	5	5	2	3	6	8	9	4	4	0	5	6	4	2

TABLE B	COMPOUND																													
Rate 250 g/ha	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	49	50	51	52	53	54	59	60	61	62	63	64
Postemergence																													
B. signalgrass	5	2	2	1	1	1	0	1	1	1	6	7	6	5	0	5	8	4	2	9	9	2	4	2	3	4	2	4	6
Barnyardgrass	5	3	3	1	2	0	0	0	0	2	5	5	5	4	0	4	6	6	4	7	7	2	3	5	2	3	3	3	4
Bedstraw	6	10	9	7	8	7	-	-	4	6	10	-	10	9	0	10	-	-	-	10	10	10	7	8	3	9	3	5	7
Blackgrass	4	5	2	1	1	2	0	0	1	2	8	7	8	7	0	6	6	6	8	9	9	1	2	5	2	6	2	3	7
Cocklebur	7	9	6	8	2	3	3	8	5	5	9	9	9	9	0	9	8	9	7	9	9	6	7	7	4	8	7	-	7
Corn	2	1	1	1	1	1	1	1	1	1	3	8	5	3	0	3	4	4	2	9	6	1	3	3	3	3	2	2	4
Crabgrass	9	2	1	1	2	1	1	1	1	3	10	8	10	7	0	8	10	9	6	10	9	4	5	8	4	7	5	4	9
Ducksalad	6	4	2	0	1	1	0	0	0	7	5	8	9	9	0	4	7	4	8	9	9	5	1	6	2	3	0	2	6
Giant foxtail	3	2	1	1	1	1	1	0	1	2	9	9	9	9	0	7	7	5	2	10	9	1	4	8	2	5	2	3	4
Morningglory	4	10	5	2	1	2	1	1	1	5	8	9	10	10	0	10	8	9	3	10	10	-	3	10	9	-	9	10	8
Nutsedge	-	1	0	0	0	0	0	0	0	-	0	2	3	3	-	-	-	-	2	-	-	0	0	0	0	0	-	0	0
Rape	9	8	7	3	9	5	4	6	4	8	10	10	10	10	0	9	10	9	10	10	9	8	9	7	4	8	2	8	4
Redroot pigweed	9	9	7	6	5	8	7	5	3	6	10	9	10	10	0	10	9	9	9	10	10	7	6	8	7	9	9	9	10
Rice	3	2	3	1	1	0	0	0	0	2	6	6	7	7	0	4	6	5	4	8	7	1	3	4	1	2	0	1	2
S. Flatsedge	8	6	8	3	2	6	0	4	2	5	9	9	9	9	0	7	9	9	9	9	9	9	9	8	6	8	7	8	8
Soybean	7	6	4	2	2	2	0	1	2	2	7	9	9	6	0	9	7	7	7	10	9	7	4	8	2	5	1	2	5
Sugarbeets	10	10	10	9	10	9	5	9	10	10	10	10	10	10	0	10	9	9	10	10	10	10	9	9	9	10	9	9	10
Velvetleaf	4	9	6	1	1	1	1	2	1	2	8	9	9	9	0	9	8	9	8	9	8	7	3	7	2	8	2	8	8
Wheat	4	2	1	1	1	2	0	1	1	2	3	4	5	3	0	4	6	5	4	9	7	1	2	2	3	3	2	2	3
Wild oats	4	3	3	2	2	2	0	1	1	1	7	6	6	5	0	4	9	7	4	9	8	1	3	3	2	3	1	2	5

TABLE B	COMPOUND												
Rate 250 g/ha	65	66	67	68	70	71	72	73	74	75	76	77	78
Postemergence													
B. signalgrass	1	4	7	3	1	-	6	9	1	3	0	1	1
Barnyardgrass	0	4	5	4	0	3	6	6	0	3	0	0	0
Bedstraw	7	6	10	9	1	-	4	9	2	9	0	4	0
Blackgrass	0	5	9	4	0	-	5	9	0	8	0	2	1
Cocklebur	1	4	8	7	2	-	4	9	5	7	4	3	0
Corn	1	2	6	2	2	-	5	3	1	3	1	1	2
Crabgrass	1	8	10	8	1	-	8	9	1	-	1	2	0

Ducksalad	0	5	6	2	0	2	3	2	0	2	0	0	0
Giant foxtail	1	2	9	2	0	-	7	9	1	4	1	1	0
Morningglory	8	9	10	10	2	-	4	9	7	10	1	4	2
Nutsedge	0	1	4	0	0	-	-	2	0	0	-	-	0
Rape	2	7	8	-	1	-	7	10	1	9	2	2	0
Redroot pigweed	6	10	10	10	3	-	9	10	8	10	2	3	4
Rice	0	1	2	3	0	2	2	6	0	1	0	0	0
S. Flatsedge	0	8	9	7	0	4	4	6	0	1	0	0	0
Soybean	2	6	8	7	3	-	5	9	2	3	1	1	0
Sugarbeets	8	10	9	10	2	-	9	9	6	10	3	3	0
Velvetleaf	2	6	8	7	1	-	5	9	2	9	1	1	0
Wheat	2	2	5	2	0	-	4	5	1	3	0	0	0
Wild oats	1	2	8	2	0	-	4	9	1	3	0	1	0

TABLE B COMPOUND

Rate 250 g/ha	1	2	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Preemergence																													
B. signalgrass	9	-	2	-	9	9	0	10	2	8	8	9	0	9	3	9	2	0	4	8	9	9	6	6	1	3	9	4	6
Bedstraw	8	10	5	8	7	0	0	10	7	9	4	5	0	8	0	5	5	0	1	8	7	9	1	2	0	-	8	3	10
Blackgrass	10	10	4	10	7	0	0	10	2	5	6	4	0	10	2	9	1	0	4	5	9	9	3	8	0	4	6	3	2
Cocklebur	3	1	0	0	1	0	0	9	1	3	2	5	0	-	0	0	0	0	-	0	2	3	0	8	0	-	-	0	0
Corn	2	1	0	1	0	0	0	3	0	0	0	1	0	2	0	1	0	0	0	1	2	1	0	0	0	0	1	0	0
Crabgrass	10	10	2	8	9	8	1	10	9	9	8	10	7	10	2	9	6	0	2	10	10	10	1	1	1	5	10	7	8
Giant foxtail	10	10	9	10	10	9	1	10	8	9	9	10	7	10	7	10	-	0	1	9	10	10	6	9	1	9	10	9	9
Morningglory	10	10	4	8	8	2	0	10	9	9	10	9	2	9	0	2	6	0	0	6	10	10	4	10	0	2	3	3	3
Nutsedge	-	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	-	-	0	0	-	0	0	-	0
Rape	10	10	2	7	10	4	0	10	4	10	6	9	2	9	0	3	0	0	0	5	10	7	4	10	0	3	4	1	3
Redroot pigweed	10	10	10	10	8	6	2	10	7	10	9	9	4	10	8	10	7	0	1	9	10	10	10	9	4	7	7	3	10
Soybean	3	2	0	1	2	0	0	2	1	1	3	3	0	1	0	0	0	0	0	0	2	1	0	1	0	0	1	0	0
Sugarbeets	10	10	10	10	10	9	0	10	6	10	10	10	6	10	7	9	6	0	2	10	10	10	9	9	0	8	3	4	10
Velvetleaf	10	8	5	7	9	2	0	9	8	8	4	10	1	7	1	1	0	0	0	10	8	10	2	2	0	1	2	0	6
Wheat	8	3	0	1	2	0	0	5	0	1	0	0	0	7	0	3	0	0	0	2	4	6	0	2	0	1	0	0	0
Wild oats	9	9	7	8	6	2	0	9	2	4	4	7	0	9	2	8	5	0	3	8	9	9	4	5	0	3	4	1	2

TABLE B	COMPOUND																												
Rate 250 g/ha	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	49	50	51	52	53	54	59	60	61	62	63	64
Preemergence																													
B. signalgrass	9	7	1	1	0	0	0	1	0	1	7	10	9	8	0	9	9	5	1	9	10	2	3	9	3	8	8	8	10
Bedstraw	-	10	2	0	1	0	0	2	0	-	8	8	10	10	0	10	8	8	9	9	9	7	1	6	1	6	2	4	8
Blackgrass	3	4	0	0	0	1	0	0	0	2	10	10	8	9	0	10	10	6	10	10	10	1	3	7	2	5	1	8	6
Cocklebur	-	0	0	0	0	0	0	-	0	0	0	8	2	8	0	-	2	2	0	10	7	0	0	-	0	1	-	-	-
Corn	1	0	0	0	0	0	0	0	0	0	1	2	1	1	0	3	3	1	0	8	7	0	1	1	0	1	1	1	4
Crabgrass	10	3	0	1	1	0	0	0	0	0	9	10	10	9	0	10	10	9	9	10	10	6	3	10	6	8	9	8	10
Giant foxtail	10	5	1	1	1	0	0	1	0	3	10	10	9	9	0	10	10	9	8	10	10	6	8	10	5	10	4	6	5
Morningglory	2	3	0	0	0	0	0	0	0	2	2	10	10	10	0	10	6	4	4	10	10	2	2	10	5	10	4	10	10
Nutsedge	0	0	-	0	0	0	0	0	0	0	-	0	-	-	0	0	-	-	-	-	-	0	0	0	-	0	0	-	-
Rape	1	10	2	0	0	1	0	0	0	2	4	10	10	10	0	10	10	10	10	10	10	7	3	7	1	9	2	4	8
Redroot pigweed	3	10	2	2	5	8	0	0	0	2	10	10	10	10	0	10	10	10	9	10	10	7	7	10	10	9	10	10	10
Soybean	0	1	0	0	0	1	0	0	0	0	1	4	7	2	0	7	2	1	1	9	8	0	0	2	0	1	0	0	1
Sugarbeets	3	10	4	0	1	2	0	0	0	6	8	10	10	10	0	10	9	9	10	10	10	9	7	10	9	10	10	10	10
Velvetleaf	0	10	1	0	1	1	0	0	0	1	10	10	10	10	0	10	10	8	9	10	10	4	1	9	1	10	2	10	6
Wheat	0	0	1	0	0	0	0	0	0	0	2	4	2	3	0	5	5	4	2	5	3	0	0	3	0	4	0	3	1
Wild oats	2	4	1	0	1	0	0	0	0	1	9	9	9	9	0	9	10	7	8	8	9	1	3	9	0	7	4	5	5

TABLE B	COMPOUND											
Rate 250 g/ha	65	66	67	68	70	72	73	74	75	76	77	78
Preemergence												
B. signalgrass	1	9	10	9	0	7	9	0	9	0	0	0
Bedstraw	0	3	9	6	0	5	9	0	6	-	-	0
Blackgrass	0	8	8	7	0	4	10	0	9	0	0	0
Cocklebur	0	0	2	2	0	0	7	0	2	0	0	0
Corn	0	1	4	1	0	5	2	0	1	0	0	0
Crabgrass	0	9	10	9	0	9	10	0	9	0	1	0
Giant foxtail	0	2	10	9	0	7	10	0	5	0	1	0
Morningglory	0	3	10	5	0	8	9	0	10	0	1	0
Nutsedge	0	-	-	0	-	-	0	0	0	-	-	0
Rape	0	4	10	4	0	9	6	0	4	0	0	0
Redroot pigweed	0	9	10	10	0	9	10	0	10	0	0	0

Soyb an	0	0	3	2	0	3	1	0	0	0	0	0
Sugarbeets	0	10	10	10	0	10	10	0	10	0	0	0
Velvetleaf	0	8	10	7	0	7	7	0	9	0	3	0
Wheat	0	2	3	2	0	3	7	0	4	0	0	0
Wild oats	0	5	6	7	0	3	10	0	7	0	0	0

TABLE B	COMPOUND																												
Rate 125 g/ha	1	2	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Postemergence																													
B. signalgrass	6	-	3	2	4	-	1	8	3	3	5	5	2	4	1	5	2	2	2	4	7	5	2	3	1	5	5	3	2
Barnyardgrass	-	4	4	8	2	1	1	5	2	-	2	2	5	8	3	4	1	2	0	4	5	5	3	4	0	2	4	3	3
Bedstraw	9	9	8	8	9	7	3	10	9	9	9	9	4	9	4	9	8	3	4	9	8	9	10	10	3	9	8	9	6
Blackgrass	7	6	2	4	4	2	0	8	1	3	3	3	2	9	1	6	2	1	2	4	8	7	3	4	1	4	5	3	1
Cocklebur	8	8	3	6	7	6	-	9	8	8	8	9	7	9	4	8	7	3	5	8	8	10	9	9	2	7	8	6	8
Corn	4	4	2	2	2	3	1	4	2	3	2	3	2	4	1	2	2	2	3	3	3	3	1	2	1	3	3	2	2
Crabgrass	9	9	2	7	3	8	0	9	2	4	3	4	2	9	2	4	2	2	3	6	9	9	8	7	1	4	9	6	1
Ducksalad	-	0	3	0	0	0	0	6	1	-	1	1	2	6	0	5	2	2	0	4	4	4	2	4	0	1	3	3	4
Giant foxtail	7	9	2	3	2	4	1	5	2	4	3	3	1	7	1	4	1	0	2	8	6	5	2	6	1	4	4	4	1
Morningglory	8	9	7	8	3	8	1	10	7	10	9	7	6	8	1	8	8	3	4	8	10	9	10	10	3	8	3	10	5
Nutsedge	-	0	0	0	0	-	0	1	0	1	0	0	0	2	0	0	0	0	0	2	0	0	1	1	0	-	3	0	0
Rape	9	9	6	10	9	8	5	10	9	9	9	8	6	9	2	8	7	2	4	10	10	10	10	10	6	8	9	9	8
Redroot pigweed	9	9	9	9	9	7	3	10	9	10	9	9	9	9	6	10	6	5	7	9	10	10	10	10	6	9	9	10	9
Rice	-	4	4	2	1	2	0	6	2	-	2	0	4	7	1	4	0	0	0	4	4	4	1	4	0	1	2	2	1
S. Flatsedge	-	5	9	6	3	5	1	9	9	-	6	4	8	8	2	3	1	2	0	8	8	8	1	5	1	5	8	6	6
Soybean	8	7	7	7	3	6	3	9	6	7	5	5	4	9	3	3	4	3	5	6	7	8	6	7	3	5	7	4	3
Sugarbeets	10	9	9	9	10	8	3	10	8	10	8	10	8	9	8	10	7	4	5	9	10	10	10	10	8	9	9	9	10
Velvetleaf	8	9	2	6	7	7	1	10	7	8	7	4	4	8	2	4	6	2	6	8	8	9	6	9	1	7	4	3	6
Wheat	2	2	2	2	2	2	0	3	3	2	3	3	0	4	0	3	3	0	3	4	4	4	2	4	0	4	4	3	2
Wild oats	7	3	2	2	4	3	0	4	2	3	3	3	1	7	0	4	5	1	3	5	6	6	3	3	0	4	5	2	2

TABLE B	COMPOUND																												
Rate 125 g/ha	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	49	50	51	52	53	54	59	60	61	62	63	64
Postemergence																													
B. signalgrass	3	2	1	1	1	1	0	1	1	1	3	7	4	4	0	4	5	3	1	8	9	1	3	2	2	4	2	3	5

Barnyardgrass	3	3	2	0	2	0	0	0	0	2	5	4	4	4	0	3	3	5	4	6	6	2	3	4	1	3	2	3	3
Bedstraw	6	6	9	3	6	7	1	7	3	4	9	9	10	9	0	9	-	-	10	10	10	8	4	7	3	8	3	2	4
Blackgrass	2	2	1	1	1	0	0	0	1	2	6	7	6	5	0	5	5	6	5	9	9	1	1	3	1	4	1	3	5
Cocklebur	6	8	6	2	2	2	2	7	2	2	8	9	7	9	0	9	8	7	4	9	8	5	3	7	3	7	5	3	7
Corn	2	1	1	1	1	1	1	1	1	1	2	3	4	3	0	2	3	3	2	8	5	1	2	2	2	3	2	2	3
Crabgrass	8	2	0	1	2	1	0	0	0	1	9	7	8	4	0	6	9	6	2	10	8	2	4	6	3	3	3	3	5
Ducksalad	2	3	1	0	0	0	0	0	0	5	3	8	9	7	0	1	3	4	5	9	9	2	0	4	2	1	0	0	6
Giant foxtail	3	1	0	1	1	1	0	1	1	0	6	7	9	7	0	4	4	5	2	10	8	1	3	6	2	4	2	2	3
Morningglory	3	8	5	1	1	2	1	1	1	2	8	9	9	-	0	10	6	6	3	10	10	3	3	-	4	9	4	4	8
Nutsedge	0	0	0	0	0	0	0	0	0	-	0	0	2	2	0	-	-	-	2	-	3	0	0	0	0	0	0	-	0
Rape	8	8	7	3	6	5	3	3	1	6	10	10	10	10	0	9	10	9	10	9	9	8	8	7	3	7	2	4	4
Redroot pigweed	9	9	2	3	3	4	1	4	2	3	10	9	10	10	0	9	9	9	8	10	10	6	5	8	7	9	9	9	9
Rice	2	1	1	1	1	0	0	0	0	1	5	6	6	6	0	2	5	4	3	5	5	1	2	3	0	0	0	0	1
S. Flatsedge	7	5	7	2	2	5	0	3	2	4	7	9	9	9	0	5	7	4	8	9	9	8	8	7	5	7	6	7	8
Soybean	4	5	2	2	2	1	0	1	1	2	7	9	9	6	0	8	8	7	7	9	9	5	3	7	2	5	1	2	3
Sugarbeets	10	10	10	8	10	8	5	9	9	10	10	10	10	10	0	10	9	9	8	10	10	10	7	9	8	10	9	9	10
Velvetleaf	2	8	4	1	1	1	0	1	1	2	8	9	9	8	0	9	7	8	7	8	8	6	2	7	2	7	2	8	7
Wheat	3	2	1	1	0	1	0	1	1	1	3	3	4	3	0	3	5	5	3	9	7	1	2	2	3	3	2	2	3
Wild oats	3	3	2	1	1	1	0	1	1	0	5	6	5	4	0	4	8	6	3	9	8	1	2	1	2	3	1	2	4

TABLE B	COMPOUND													
Rate 125 g/ha	65	66	67	68	69	70	71	72	73	74	75	76	77	78
Postemergence														
B. signalgrass	1	3	7	3	3	0	2	4	9	1	2	0	0	0
Barnyardgrass	0	3	3	3	2	0	2	3	5	0	2	0	0	0
Bedstraw	3	3	9	6	9	1	-	-	9	1	9	0	1	0
Blackgrass	0	3	8	3	3	0	3	5	7	0	6	0	0	0
Cocklebur	1	4	7	-	8	2	4	4	9	5	7	3	3	0
Corn	1	2	5	1	2	1	3	3	3	1	3	1	1	0
Crabgrass	1	7	9	8	4	1	3	6	9	0	4	0	2	0
Ducksalad	0	3	4	1	1	0	0	2	1	0	1	0	0	0
Giant foxtail	1	2	6	2	3	0	2	6	8	0	2	0	1	0
Morningglory	1	4	7	8	10	1	6	4	9	1	10	0	4	0
Nutsedge	0	1	2	0	-	0	-	-	0	0	0	-	-	0

Rape	1	3	8	6	8	1	7	7	10	1	7	2	1	0
Redroot pigweed	3	9	10	10	10	2	8	9	9	2	9	1	2	0
Rice	0	1	2	1	2	0	2	0	5	0	1	0	0	0
S. Flatsedge	0	8	8	7	4	0	2	3	3	0	0	0	0	0
Soybean	2	5	7	5	4	2	4	2	9	2	3	0	1	0
Sugarbeets	7	10	9	10	10	1	8	9	10	2	10	2	1	0
Velvetleaf	1	5	8	7	8	1	6	3	9	1	9	1	1	0
Wheat	1	2	4	2	4	0	4	3	4	1	2	0	0	0
Wild oats	1	2	7	2	3	0	2	2	7	1	3	0	0	0

TABLE B

	COMPOUND																												
Rate 125 g/ha	1	2	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Preemergence																													
B. signalgrass	9	-	2	-	8	4	0	9	1	3	8	8	0	9	2	7	1	0	1	3	9	9	3	2	0	1	5	3	4
Bedstraw	8	10	0	3	4	0	0	7	7	8	4	2	0	8	0	3	2	0	0	1	7	8	1	1	0	0	4	1	10
Blackgrass	9	7	3	9	3	0	0	9	2	3	4	4	0	10	0	6	0	0	2	3	9	9	2	5	0	2	5	1	2
Cocklebur	2	1	0	0	0	0	0	2	-	-	-	-	-	1	0	0	-	-	0	0	1	1	0	0	0	-	0	0	0
Corn	1	1	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Crabgrass	10	10	1	6	9	2	0	10	7	7	4	10	1	10	0	8	0	0	1	6	10	10	3	0	0	2	4	4	3
Giant foxtail	10	10	8	10	9	6	0	10	7	9	7	10	4	10	3	10	0	0	0	8	10	10	6	4	1	5	9	4	5
Morningglory	10	9	3	7	4	1	0	10	3	8	6	10	0	7	0	1	4	0	0	1	10	8	4	3	0	2	2	2	1
Nutsedge	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	1	0	0	0	0	0	0	0	0
Rape	10	10	1	4	10	2	0	9	4	9	5	6	1	9	0	2	0	0	0	3	7	3	2	7	0	2	2	1	2
Redroot pigweed	10	10	9	8	8	3	0	10	6	9	9	9	2	10	0	9	3	0	0	8	10	9	8	3	0	6	6	3	7
Soybean	1	1	0	0	1	0	0	1	0	1	2	1	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
Sugarbeets	10	10	8	8	10	3	0	10	-	10	8	10	5	10	1	8	6	0	0	8	9	8	3	8	0	1	2	3	9
Velvetleaf	10	6	1	6	7	2	0	8	7	6	4	7	0	7	0	1	0	0	0	8	8	3	1	0	0	0	1	0	2
Wheat	5	2	0	0	2	0	0	2	0	1	0	0	0	4	0	1	0	0	0	0	2	3	0	1	0	0	0	0	0
Wild oats	9	9	4	7	5	0	0	8	1	4	2	5	0	9	1	5	3	0	2	5	8	8	1	3	0	1	3	0	1

TABLE B	COMPOUND																													
Rate 125 g/ha	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	49	50	51	52	53	54	59	60	61	62	63	64
Preemergence																													
B. signalgrass	9	6	1	0	0	0	0	0	0	0	6	9	9	8	0	9	6	1	1	9	9	1	1	9	3	7	4	7	9
B dstraw	-	8	1	0	0	0	0	1	0	-	2	8	9	5	0	9	8	7	7	10	8	3	0	6	0	4	1	4	8
Blackgrass	2	2	0	0	0	0	0	0	0	1	9	10	5	6	0	8	8	4	5	9	8	0	1	3	1	3	1	3	6
Cocklebur	0	0	0	0	0	0	0	0	0	0	0	3	2	5	0	-	2	0	0	10	-	0	0	2	0	0	0	-	1
Corn	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	2	1	0	8	3	0	0	1	0	1	0	1	3
Crabgrass	4	1	0	0	1	0	0	0	0	0	9	10	10	4	0	9	10	7	9	10	10	4	0	9	2	5	3	6	10
Giant foxtail	5	2	1	0	0	0	0	1	0	1	9	10	9	5	0	9	10	8	7	10	9	5	1	10	2	9	2	3	2
Morningglory	2	2	0	0	0	0	0	0	0	1	1	10	10	9	0	10	6	3	3	10	10	2	1	6	2	3	2	7	10
Nutsedge	0	0	0	0	0	0	0	0	0	-	-	-	0	-	0	0	-	-	-	9	-	0	0	0	0	0	0	0	-
Rape	0	10	0	0	0	0	0	0	0	1	3	10	10	8	0	9	9	8	10	10	10	5	0	7	0	8	1	3	4
Redroot pigweed	2	10	0	0	0	0	0	0	0	1	10	10	10	9	0	10	9	8	9	10	10	2	2	10	9	9	9	9	9
Soybean	0	0	0	0	0	0	0	0	0	0	0	4	5	2	0	3	0	1	1	9	7	0	0	2	0	1	0	0	1
Sugarbeets	0	10	1	0	0	0	0	0	0	6	6	10	10	10	0	10	7	6	6	10	10	8	1	10	8	10	10	10	10
Velvetleaf	0	9	0	0	0	0	0	0	0	0	3	7	10	10	0	10	10	8	7	10	10	2	0	7	1	10	2	2	6
Wheat	0	0	0	0	0	0	0	0	0	0	1	2	2	1	0	3	3	4	2	3	2	0	0	2	0	3	0	2	0
Wild oats	1	3	0	0	0	0	0	0	0	0	9	8	9	7	0	8	9	6	4	7	5	0	1	8	0	5	3	3	4

TABLE B	COMPOUND													
Rate 125 g/ha	65	66	67	68	69	70	71	72	73	74	75	76	77	78
Preemergence														
B. signalgrass	0	9	9	8	9	0	2	2	9	0	9	0	0	0
Bedstraw	0	2	9	5	9	0	1	-	8	0	6	-	-	0
Blackgrass	0	3	4	5	4	0	2	1	9	0	8	0	0	0
Cocklebur	0	0	-	-	2	0	0	0	1	0	0	0	0	0
Corn	0	1	4	1	0	0	1	4	1	0	0	0	0	0
Crabgrass	0	9	9	4	9	0	2	9	10	0	9	0	0	0
Giant foxtail	0	1	9	6	8	0	2	5	10	0	5	0	0	0
Morningglory	0	3	10	3	8	0	4	3	9	0	10	0	0	0
Nutsedge	0	-	-	0	0	0	-	-	0	0	0	0	-	0
Rape	0	0	9	3	8	0	7	5	6	0	3	0	0	0
Redroot pigweed	0	9	10	9	10	0	8	9	10	0	10	0	0	0

Soybean	0	0	2	1	1	0	0	3	1	0	0	0	0	0
Sugarbeets	0	10	10	10	9	0	3	10	9	0	10	0	0	0
Velvetleaf	0	4	9	7	8	0	6	4	4	0	8	0	0	0
Wheat	0	1	3	1	1	0	3	0	4	0	4	0	0	0
Wild oats	0	4	5	6	7	0	3	2	9	0	7	0	0	0

TABLE B

	COMPOUND																												
Rate 62 g/ha	1	2	4	5	6	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Postemergence																													
B. signalgrass	3	-	1	3	-	5	2	3	4	5	2	4	1	4	2	1	2	3	5	4	2	2	1	3	4	3	1	3	1
Barnyardgrass	-	3	4	2	0	5	1	-	2	2	4	6	2	4	2	0	0	3	4	4	2	3	0	1	3	2	3	2	2
Bedstraw	9	9	6	6	5	10	8	8	7	7	4	9	3	8	7	2	4	5	-	9	4	9	1	8	2	2	1	4	6
Blackgrass	7	3	3	3	0	3	1	2	2	3	1	6	1	3	2	1	2	3	5	6	2	3	0	4	4	2	0	2	1
Cocklebur	7	8	5	5	5	9	6	7	-	6	4	9	4	4	6	2	4	7	8	9	9	9	2	7	7	6	5	6	8
Corn	4	2	2	2	3	3	2	3	2	3	2	3	1	2	2	1	3	3	3	2	1	1	1	2	2	2	1	2	1
Crabgrass	4	8	4	2	5	9	2	2	2	3	2	9	2	4	1	1	2	3	9	7	8	7	1	3	3	4	1	4	1
Ducksalad	-	0	0	0	0	4	1	-	0	0	2	6	0	3	1	0	0	3	3	2	0	3	0	0	2	1	3	1	2
Giant foxtail	3	7	2	2	-	4	2	2	2	2	1	7	1	2	1	0	2	1	6	2	2	3	1	3	3	3	1	2	1
Morningglory	4	8	8	3	3	10	5	7	9	7	2	8	-	7	3	3	3	8	10	6	8	10	3	5	3	8	2	3	7
Nutsedge	-	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	2	0	0	0	0	0
Rap	9	9	9	8	8	9	8	9	7	6	5	9	1	7	4	2	3	9	10	10	8	10	3	8	9	8	4	8	8
Redroot pigweed	9	7	8	9	5	10	9	9	9	9	8	9	5	9	6	2	5	8	10	9	9	10	6	7	8	8	7	8	6
Rice	-	3	2	1	1	5	0	-	1	0	4	6	1	4	1	0	0	3	3	3	1	3	0	0	2	1	1	1	1
S. Flatsedge	-	3	5	3	3	8	6	-	4	2	8	7	1	2	9	0	0	6	3	4	0	3	0	5	5	1	4	4	2
Soybean	8	6	6	3	6	8	6	5	3	4	4	9	3	3	3	2	4	6	6	8	3	4	3	5	4	3	3	4	4
Sugarbeets	10	9	9	9	7	10	8	9	7	9	7	9	8	9	7	2	3	9	10	10	10	10	3	9	9	9	10	10	9
Velvetleaf	7	8	5	6	7	10	6	8	7	4	3	5	1	2	5	1	4	7	8	9	2	8	1	5	3	3	5	2	4
Wheat	2	2	1	2	1	3	2	2	3	2	0	4	0	3	1	0	2	4	4	3	2	2	0	3	3	2	1	1	1
Wild oats	4	3	2	3	0	3	2	2	3	3	0	6	0	3	3	0	2	4	5	5	2	3	0	3	4	1	1	2	1

TABLE B	COMPOUND																													
Rate 62 g/ha	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	49	50	51	52	53	54	59	60	61	62	63	64	65	66
Postemergence																													
B. signalgrass	1	1	1	1	0	1	1	1	2	6	4	3	0	3	4	2	1	2	4	1	3	2	2	3	2	4	4	1	2
Barnyardgrass	1	0	0	0	0	0	0	2	5	4	4	3	0	2	2	5	3	5	5	1	2	3	1	2	1	1	2	0	3
Bedstraw	9	2	6	6	1	7	3	4	9	9	9	8	0	8	9	9	9	9	9	5	3	7	2	8	3	2	3	0	2
Blackgrass	0	0	1	0	0	0	1	2	5	6	5	4	0	4	5	5	2	7	5	1	1	2	1	3	1	2	4	0	2
Cocklebur	3	2	2	1	1	4	2	5	7	9	-	8	0	8	7	7	4	6	8	5	3	4	3	3	2	1	6	1	3
Corn	1	1	1	1	1	1	1	1	2	3	3	3	0	2	3	3	1	7	4	1	2	1	2	2	1	0	1	1	1
Crabgrass	0	0	2	0	0	0	0	1	7	4	7	3	0	6	7	5	1	9	6	1	2	6	2	3	2	3	4	1	2
Ducksalad	0	0	0	0	0	0	0	1	2	1	8	4	0	1	3	4	4	8	9	0	0	3	1	0	0	0	4	0	2
Giant foxtail	0	0	1	0	0	0	0	0	2	6	8	2	0	3	4	2	1	8	7	1	2	6	2	2	1	2	1	1	2
Morningglory	2	1	1	1	1	1	1	2	8	8	9	10	0	9	6	2	3	10	10	-	2	7	2	5	3	2	2	-	2
Nutsedge	0	0	0	0	0	0	0	-	0	0	0	1	0	2	-	-	2	7	1	0	0	0	0	0	0	0	0	0	0
Rape	6	2	6	4	1	3	1	6	10	10	9	9	0	9	10	9	9	9	9	8	7	6	3	6	2	3	3	1	3
Redroot pigweed	1	1	3	0	1	2	2	2	9	9	10	9	0	9	9	9	8	10	9	2	4	8	5	8	8	8	8	2	8
Rice	1	1	0	0	0	0	0	1	5	4	4	5	0	1	3	3	2	3	3	1	1	2	0	0	0	0	1	0	0
S. Flatsedge	3	2	1	2	0	0	0	2	5	9	9	9	0	4	7	4	6	9	9	5	6	7	4	3	3	4	8	0	6
Soybean	1	1	1	1	0	1	1	2	5	9	8	5	0	8	8	6	6	9	9	5	0	6	2	4	1	0	2	1	5
Sugarbeets	10	8	9	8	1	9	7	10	10	10	10	10	0	10	9	9	7	10	9	9	6	9	8	9	9	10	9	7	10
Velvetleaf	1	1	1	1	0	1	0	1	8	8	8	8	0	9	7	8	6	7	8	6	2	6	2	7	2	2	2	1	4
Wheat	0	0	0	0	0	1	0	1	2	2	3	3	0	3	5	4	3	6	4	1	0	1	2	3	1	2	2	1	2
Wild oats	1	0	1	0	0	1	1	0	4	6	4	4	0	3	6	5	2	8	6	1	1	1	2	3	1	3	3	1	2

TABLE B	COMPOUND											
Rate 62 g/ha	67	68	69	70	71	72	73	74	75	76	77	78
Postemergence												
B. signalgrass	5	2	3	0	2	2	8	1	2	0	0	0
Barnyardgrass	3	2	1	0	2	2	4	0	2	0	0	0
Bedstraw	9	5	9	1	-	-	9	1	5	0	1	0
Blackgrass	5	2	2	0	2	4	7	0	3	0	0	0
Cocklebur	7	3	8	1	4	3	9	1	7	1	1	0
Corn	4	1	2	1	2	2	2	1	2	1	1	0
Crabgrass	7	5	3	0	2	4	7	0	-	0	0	0

TABLE B	COMPOUND											
Rate 62 g/ha	67	68	69	70	71	72	73	74	75	76	77	78
Preemergence												
B. signalgrass	8	5	8	0	0	1	9	0	8	0	0	0
Bedstraw	7	3	7	0	-	0	2	0	3	-	-	0
Blackgrass	3	3	1	0	1	1	8	0	3	0	0	0
Cocklebur	-	0	0	0	-	0	0	0	0	0	0	0
Corn	4	0	0	0	1	3	1	0	0	0	0	0
Crabgrass	6	3	6	0	2	6	10	0	6	0	0	0
Giant foxtail	7	3	4	0	1	5	10	0	1	0	0	0

Ducksalad	3	0	0	0	0	2	1	0	0	0	0	0
Giant foxtail	5	1	2	0	2	5	6	0	1	0	0	0
Morningglory	7	2	9	1	1	-	9	1	10	0	2	0
Nutsedge	0	0	2	0	-	-	0	0	0	-	0	0
Rape	6	6	6	0	5	3	10	1	5	1	1	0
Redroot pigweed	9	9	10	0	8	8	9	2	9	1	2	0
Rice	1	0	0	0	2	0	5	0	1	0	0	0
S. Flatsedge	5	5	2	0	0	3	3	0	0	0	0	0
Soybean	7	3	4	1	3	2	8	2	3	0	0	0
Sugarbeets	9	10	10	0	8	9	10	1	10	1	1	0
Velvetleaf	8	6	8	0	3	2	9	1	8	0	1	0
Wheat	3	2	3	0	4	3	4	1	2	0	0	0
Wild oats	5	2	3	0	2	2	6	1	3	0	0	0

Morningglory	8	3	8	0	2	2	3	0	6	0	0	0
Nutsedge	-	0	0	0	-	-	0	0	0	0	0	0
Rape	7	2	7	0	2	4	2	0	2	0	0	0
Redroot pigweed	9	8	8	0	6	7	9	0	9	0	0	0
Soybean	1	0	0	0	0	0	0	0	0	0	0	0
Sugarbeets	9	9	9	0	2	8	9	0	9	0	0	0
Velvetleaf	8	2	-	0	-	3	2	0	2	0	0	0
Wheat	3	1	1	0	1	0	2	0	0	0	0	0
Wild oats	3	4	4	0	0	1	7	0	5	0	0	0

TABLE B

	COMPOUND																												
Rate 62 g/ha	1	2	4	5	6	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Preemergence																													
B. signalgrass	9	-	-	3	1	8	1	2	3	7	0	9	0	3	0	0	0	2	5	9	2	1	0	0	2	1	1	3	2
Bedstraw	8	10	-	2	0	4	3	5	2	1	0	6	0	1	0	0	0	0	6	-	0	1	0	0	2	0	3	-	3
Blackgrass	8	3	6	2	0	4	1	3	1	2	0	9	0	2	0	0	1	1	8	6	0	1	0	0	2	1	0	1	1
Cocklebur	2	0	0	0	0	0	-	0	0	0	0	-	0	0	-	0	0	0	1	1	0	0	0	0	0	0	0	0	0
Corn	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crabgrass	10	9	3	7	1	9	5	7	4	9	0	9	0	3	0	0	0	3	7	9	1	0	0	1	2	2	1	1	1
Giant foxtail	10	10	9	7	2	10	3	6	5	9	0	10	0	5	0	0	0	5	9	10	0	1	0	2	4	1	1	2	1
Morningglory	10	7	1	2	1	8	2	3	4	9	0	4	0	0	1	0	0	1	3	4	2	3	0	1	2	0	1	0	1
Nutsedge	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0
Rape	10	10	2	5	0	9	3	9	0	5	0	6	0	0	0	0	0	2	5	1	0	2	0	1	1	1	0	0	2
Redroot pigweed	10	10	3	8	0	9	3	9	7	7	0	6	0	4	0	0	0	7	9	9	0	1	0	2	5	0	2	1	8
Soybean	1	0	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
Sugarbeets	10	10	1	8	0	9	6	10	6	9	3	10	0	1	3	0	0	7	9	8	2	6	0	0	0	0	6	0	8
V lvetleaf	6	6	-	2	1	7	5	3	3	6	0	4	0	0	0	0	0	4	8	1	0	0	0	0	1	0	1	0	6
Wheat	1	1	0	1	0	1	0	0	0	0	0	2	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0
Wild oats	8	6	2	3	0	5	0	2	1	3	0	8	0	2	2	0	1	4	7	7	0	1	0	0	3	0	1	0	2

TABLE B									COMPOUND																				
Rate 62 g/ha	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	49	50	51	52	53	54	59	60	61	62	63	64	65	66
Preemergence																													
B. signalgrass	0	0	0	0	0	0	0	0	2	9	5	6	0	9	5	0	0	4	8	0	0	7	2	5	4	4	8	0	9
Bedstraw	0	0	0	0	0	0	0	-	2	7	8	4	0	8	7	4	2	8	7	1	0	3	0	3	0	2	3	0	1
Blackgrass	0	0	0	0	0	0	0	0	7	6	2	5	0	8	3	4	3	7	5	0	0	2	1	1	1	2	5	0	3
Cocklebur	0	0	0	0	0	0	0	0	0	1	1	2	0	10	1	0	0	3	1	0	-	0	0	0	0	1	1	0	0
Corn	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	4	3	0	0	0	0	1	0	0	3	0	0
Crabgrass	0	0	0	0	0	0	0	0	8	9	8	4	0	9	8	5	6	10	9	-	0	8	0	3	2	3	9	0	6
Giant foxtail	0	0	0	0	0	0	0	0	6	10	7	4	0	9	9	5	2	8	9	1	1	8	2	8	1	2	1	0	0
Morningglory	0	0	0	0	0	0	0	0	1	9	9	8	0	10	1	1	1	10	9	1	0	6	1	-	1	2	4	0	2
Nutsedge	0	0	0	0	0	0	0	0	-	0	0	2	0	-	-	-	-	3	0	0	0	0	0	0	0	0	0	0	0
Rape	0	0	0	0	0	0	0	0	3	7	8	4	0	9	7	7	6	10	9	2	0	5	0	4	0	3	3	0	0
Redroot pigweed	0	0	0	0	0	0	0	0	4	9	10	7	0	10	8	8	7	10	10	0	1	8	6	8	8	8	9	0	7
Soybean	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	0	1	9	4	0	0	1	0	0	0	0	0	0	0
Sugarbeets	0	0	0	0	0	0	0	2	3	10	10	9	0	10	7	6	6	10	10	4	0	10	6	10	8	10	9	0	9
Velvetleaf	0	0	0	0	0	0	0	0	1	10	10	8	0	10	8	3	4	10	10	0	0	7	1	9	1	2	4	0	1
Wheat	0	0	0	0	0	0	0	0	1	1	2	0	0	1	2	1	1	0	2	0	0	1	0	1	0	2	0	0	0
Wild oats	0	0	0	0	0	0	0	0	4	4	6	6	0	6	9	2	3	4	3	0	0	7	0	4	1	3	3	0	2

TEST C

Compounds evaluated in this test were formulated in a non-phytotoxic solvent mixture which included a surfactant and applied to plants that were grown for various periods of time before treatment (postemergence application) using a sandy loam soil mixture.

Plantings of these crops and weed species were adjusted to produce plants of appropriate size for the postemergence test. All plant species were grown using normal greenhouse practices. Crop and weed species include arrowleaf sida (*Sida rhombifolia*), barnyardgrass (*Echinochloa crus-galli*), cocklebur (*Xanthium strumarium*), common ragweed (*Ambrosia elatior*), corn (*Zea mays*), cotton (*Gossypium hirsutum*), eastern black nightshade (*Solanum ptycanthum*), fall panicum (*Panicum dichotomiflorum*), field bindweed (*Convolvulus arvensis*), giant foxtail (*Setaria faberii*), hairy beggarticks (*Bidens pilosa*), ivyleaf morningglory (*Ipomoea hederacea*), johnsongrass (*Sorghum halepense*), ladysthumb smartweed (*Polygonum persicaria*), lambsquarters (*Chenopodium album*), large crabgrass (*Digitaria sanguinalis*), purple nutsedge (*Cyperus rotundus*), redroot pigweed (*Amaranthus retroflexus*), soybean (*Glycine max*), surinam grass (*Brachiaria decumbens*), velvetleaf (*Abutilon theophrasti*) and wild poinsettia (*Euphorbia heterophylla*).

Treated plants and untreated controls were maintained in a greenhouse for approximately 14 to 21 days, after which all treated plants were compared to untreated controls and visually evaluated. Plant response ratings, summarized in Table C, were based upon a 0 to 100 scale where 0 was no effect and 100 was complete control. A dash response (-) means no test result.

TABLE C	COMPOUND
Rate 140 g/ha	9
POSTEMERGENCE	
Arrowleaf sida	90
Barnyardgrass	25
Cocklebur	80
Common ragweed	10
Corn	15
Cotton	90
E. blacknightsh	100
Fall panicum	30
Field bindweed	80
Giant foxtail	30
H. beggarticks	80
I. morningglory	100
Johnsongrass	50
Ladysthumb	30
Lambsquarters	100
Large crabgrass	50
Purple nutsedge	5
Redroot pigweed	-

TABLE C	COMPOUND
Rate 70 g/ha	9
POSTEMERGENCE	
Arrowleaf sida	90
Barnyardgrass	25
Cocklebur	80
Common ragweed	30
Corn	15
Cotton	80
E. blacknightsh	-
Fall panicum	20
Field bindweed	70
Giant foxtail	15
H. beggarticks	70
I. morningglory	60
Johnsongrass	-
Ladysthumb	30
Lambsquarters	80
Large crabgrass	40
Purple nutsedge	5
Redroot pigweed	70

Soybean	50	Soybean	50
Surinam grass	20	Surinam grass	5
Velvetleaf	90	Velvetleaf	70
Wild poinsettia	100	Wild poinsettia	90

TABLE C				COMPOUND								
Rate 140 g/ha	1	2	3	9	15	21	23	42	43	46	52	66
PREEMERGENCE												
Arrowleaf sida	100	100	0	95	85	90	100	100	100	100	100	100
Barnyardgrass	100	30	0	50	85	5	10	100	50	50	40	5
Cocklebur	0	10	0	0	5	0	5	60	-	5	20	0
Common ragweed	100	50	0	75	75	20	90	85	50	80	100	30
Corn	10	30	0	10	10	0	5	5	55	5	50	0
Cotton	100	15	0	50	10	20	75	60	10	40	70	0
E. blacknightsh	95	90	0	95	95	85	100	95	100	100	100	30
Fall panicum	95	100	0	100	100	90	100	100	100	100	100	100
Field bindweed	50	100	0	90	100	40	100	100	100	100	100	90
Giant foxtail	100	100	0	100	100	100	100	100	100	100	100	0
H. beggarticks	100	100	0	85	-	40	100	90	100	100	30	0
I. morningglory	20	5	0	50	65	0	40	100	100	50	100	10
Johnsongrass	100	60	0	95	100	5	80	85	30	50	80	10
Ladysthumb	95	-	-	90	90	5	80	95	-	50	-	70
Lambsquarters	100	100	0	100	60	90	100	100	100	100	100	100
Large crabgrass	100	100	0	100	100	100	100	100	100	100	100	100
Purple nutsedge	0	0	0	0	0	0	0	0	0	-	10	0
Redroot pigweed	100	100	0	100	100	100	100	100	100	100	100	100
Soybean	0	40	0	25	10	5	10	35	55	20	70	0
Surinam grass	95	35	0	90	80	10	60	70	10	25	70	20
Velvetleaf	100	50	0	100	70	50	50	95	100	80	100	0
Wild poinsettia	50	45	0	50	20	5	10	85	60	20	100	0

TABLE C				COMPOUND								
Rate 70 g/ha	1	2	3	9	15	21	23	42	43	46	52	66
PREEMERGENCE												
Arrowleaf sida	95	20	0	95	85	85	100	95	100	90	100	5
Barnyardgrass	75	5	0	50	35	0	5	10	30	10	40	5
Cocklebur	0	-	0	0	0	0	-	-	-	10	0	0
Common ragweed	100	0	0	95	20	0	30	85	40	20	60	0
Corn	10	0	0	5	5	0	0	5	30	0	45	0
Cotton	60	5	0	35	10	5	75	60	0	5	0	0
E. blacknightsh	90	5	0	100	95	80	100	95	100	100	80	10
Fall panicum	90	5	0	90	80	0	100	85	100	100	100	80
Field bindweed	50	30	0	100	100	40	100	100	100	70	100	80
Giant foxtail	100	5	0	100	100	100	100	80	100	100	85	0
H. beggarticks	100	40	0	85	-	0	50	-	5	100	0	0
I. morningglory	15	5	0	50	20	0	-	70	100	50	100	10
Johnsongrass	95	5	0	85	85	0	20	70	30	45	50	5
Ladysthumb	90	30	-	85	20	-	80	85	-	10	-	-
Lambsquarters	100	-	0	100	20	5	100	100	100	100	100	0
Large crabgrass	100	5	0	100	100	100	100	100	100	100	100	100
Purple nutsedge	0	0	0	0	0	0	0	0	0	-	5	0
Redroot pigweed	100	5	0	100	85	80	100	100	100	100	100	100
Soybean	0	0	0	20	10	0	5	5	5	0	55	0
Surinam grass	90	10	0	80	50	5	45	55	5	5	40	5
Velvetleaf	75	5	0	95	20	50	-	80	100	80	100	0

Wild poinsettia	10	5	0	50	0	5	5	30	50	15	40	0

TABLE C	COMPOUND
Rate 35 g/ha	9
POSTEMERGENCE	
Arrowleaf sida	80
Barnyardgrass	10
Cocklebur	60
Common ragweed	-
Corn	10
Cotton	70
E. blacknightsh	100
Fall panicum	5
Field bindweed	60
Giant foxtail	15
H. beggarticks	65
I. morningglory	50
Johnsongrass	10
Ladysthumb	20
Lambsquarters	75
Large crabgrass	20
Purple nutsedge	5
Redroot pigweed	60
Soybean	40
Surinam grass	5
Velvetleaf	10
Wild poinsettia	90

TABLE C	COMPOUND											
Rate 35 g/ha	1	2	3	9	15	21	23	42	43	46	52	66
PREEMERGENCE												
Arrowleaf sida	85	10	0	90	80	70	80	95	100	100	100	5
Barnyardgrass	20	0	0	10	10	0	0	5	10	5	30	0
Cocklebur	0	0	0	0	0	0	-	0	0	0	-	0
Common ragweed	80	0	0	80	10	0	10	20	0	10	40	0
Corn	5	0	0	0	0	0	0	5	0	0	0	0
Cotton	30	0	0	10	5	0	5	30	0	0	0	0
E. blacknightsh	90	5	0	95	70	40	95	90	100	80	40	0
Fall panicum	90	0	0	85	40	10	55	50	100	60	100	80
Field bindweed	65	0	0	50	65	-	20	95	100	10	100	40
Giant foxtail	100	0	0	90	70	85	85	70	100	100	70	0
H. beggarticks	20	40	0	85	-	0	50	0	0	0	0	0
I. morningglory	15	0	0	20	15	0	5	30	20	45	5	5
Johnsongrass	50	5	0	65	35	0	5	70	10	5	40	0
Ladysthumb	25	-	-	35	0	0	5	90	-	25	-	0
Lambsquarters	100	0	0	95	0	0	60	85	100	60	100	0
Large crabgrass	100	0	0	95	100	80	100	80	100	80	100	80
Purple nutsedge	0	0	0	0	0	0	0	0	0	-	0	0
Redroot pigweed	100	5	0	100	60	-	100	100	100	70	100	100
Soybean	0	0	0	20	0	0	5	0	0	0	0	0
Surinam grass	50	0	0	35	20	0	5	50	0	0	5	5
Velvetleaf	20	0	0	75	5	0	50	40	100	50	70	0
Wild poinsettia	0	0	0	10	0	0	5	25	10	0	-	0

TEST D

Compounds evaluated in this test were formulated in a non-phytotoxic solvent mixture which included a surfactant and applied to plants that were in the 1- to 4-leaf stage (postemergence application). A mixture of sandy loam soil and greenhouse potting mix in a 60:40 ratio was used for the postemergence test.

Plantings of these crops and weed species were adjusted to produce plants of appropriate size for the postemergence test. All plant species were grown using normal greenhouse practices. Crop and weed species include alfalfa (*Medicago sativa*), annual bluegrass (*Poa annua*), blackgrass (*Alopecurus myosuroides*), black nightshade (*Solanum nigra*), chickweed (*Stellaria media*), common poppy (*Papaver rhoeas*), deadnettle (*Lamium amplexicaule*), downy brome (*Bromus tectorum*), field violet (*Viola arvensis*), galium 2 (*Galium aparine*), green foxtail (*Setaria viridis*), Italian ryegrass (*Lolium multiflorum*), jointed goatgrass (*Aegilops cylindrica*), kochia (*Kochia scoparia*), lambsquarters (*Chenopodium album*), lentil (*Lens culinaris*), littleseed canarygrass (*Phalaris minor*), pea (*Pisum sativum*), potato (*Solanum tuberosum*), rape (*Brassica napus*), redroot pigweed (*Amaranthus retroflexus*), Russian thistle (*Salsola kali*), scentless chamomile (*Matricaria inodora*), sorghum (*Sorghum vulgare*), spring barley (*Hordeum vulgare*), sugar beet (*Beta vulgaris*), sunflower (*Helianthus annuus*), ivyleaf speedwell (*Veronica hederaefolia*), spring wheat (*Triticum aestivum*), winter wheat (*Triticum aestivum*), wild buckwheat (*Polygonum convolvulus*), wild mustard (*Sinapis arvensis*), wild oat (*Avena fatua*), windgrass (*Apera spica-venti*) and winter barley (*Hordeum vulgare*).

Treated plants and untreated controls were maintained in a greenhouse for approximately 21 to 28 days, after which all treated plants were compared to untreated controls and visually evaluated. Plant response ratings, summarized in Table D, are based upon a 0 to 100 scale where 0 is no effect and 100 is complete control. A dash response (-) means no test result.

TABLE D	COMPOUND	
Rate 250 g/ha	1	22
PREEMERGENCE		
Alfalfa	-	-
Annual bluegras	85	50
Barley (winter)	40	10
Blackgrass	70	40
Blk nightshade	100	50
Chickweed	90	30
Common poppy	100	70
Deadnettle	90	10
Downy brome	100	10
Field violet	85	-
Galium	100	30
Green foxtail	100	100

TABLE D	COMPOUND		
Rate 125 g/ha	1	22	52
POSTEMERGENCE			
Annual bluegras	-	70	50
Barley (winter)	10	10	10
Blackgrass	30	20	10
Blk nightshade	50	100	65
Chickweed	70	100	80
Common poppy	100	100	100
Deadnettle	70	90	98
Downy brome	10	20	20
Field violet	80	100	-
Galium	70	90	60
Green foxtail	20	35	30
I. Ryegrass	10	10	10

I. Ryegrass	100	75
Jointed goatgra	50	10
Kochia	85	60
Lambsquarters	70	70
Lentil	-	-
LS canarygrass	70	50
Pea	-	-
Potato	-	-
Rape	100	50
Redroot pigweed	70	70
Russian thistle	100	-
Scentless chamo	85	70
Sorghum	-	-
Spring Barley	40	2
Spring Wheat	-	5
Sugar beet	100	80
Sunflower	30	30
Ivyleaf speedwe	100	-
Wheat (spring)	30	-
Wheat (winter)	40	5
Wild buckwheat	85	30
Wild mustard	98	30
Wild oat	90	30
Windgrass	100	30

Jointed goatgra	10	15	10
Kochia	70	70	70
Lambsquarters	50	60	80
LS canarygrass	20	60	20
Rape	85	90	85
Redroot pigweed	50	70	70
Russian thistle	50	80	-
Scentless chamo	60	80	70
Spring Barley	10	20	10
Spring Wheat	20	20	10
Sugar beet	100	100	100
Sunflower	20	20	70
Wheat (winter)	10	10	10
Wild buckwheat	20	20	80
Wild mustard	100	100	100
Wild oat	30	65	10
Windgrass	30	-	50

TABLE D	COMPOUND		
Rate 125 g/ha	1	22	52
PREEMERGENCE			
Alfalfa	-	-	-
Annual bluegras	100	100	100
Barley (winter)	30	20	60
Blackgrass	60	60	90
Blk nightshade	100	60	90
Chickweed	85	70	85
Common poppy	100	70	-
Deadnettle	85	70	90
Downy brome	60	100	50
Field violet	85	-	-
Galium	100	100	-
Green foxtail	100	100	100
I. Ryegrass	100	65	70
Jointed goatgra	70	20	40
Kochia	100	65	100
Lambsquarters	70	70	100
Lentil	-	-	-
LS canarygrass	85	60	90
Pea	-	-	-
Potato	-	-	-
Rape	100	100	100
Redroot pigweed	75	100	100
Russian thistle	-	-	85
Scentless chamo	75	70	-
Sorghum	-	-	-
Spring Barley	20	10	80
Spring Wheat	0	10	70

TABLE D	COMPOUND		
Rate 62 g/ha	1	22	52
POSTEMERGENCE			
Annual bluegras	50	30	20
Barley (winter)	10	10	10
Blackgrass	10	10	10
Blk nightshade	50	90	65
Chickweed	80	60	70
Common poppy	100	100	100
Deadnettle	70	50	100
Downy brome	10	10	20
Field violet	100	100	-
Galium	70	70	65
Green foxtail	20	10	10
I. Ryegrass	10	10	10
Jointed goatgra	10	10	10
Kochia	80	50	70
Lambsquarters	60	60	80
LS canarygrass	20	20	10
Rape	100	90	98
Redroot pigweed	70	50	60
Russian thistle	60	80	-
Scentless chamo	60	50	60
Spring Barley	10	10	10
Spring Wheat	10	10	10
Sugar beet	90	100	100
Sunflower	20	10	50
Wheat (winter)	10	10	10
Wild buckwheat	0	20	70
Wild mustard	100	100	98

Sugar beet	85	100	100		
Sunflower	50	10	0		
Ivyleaf speedwe	100	-	-		
Wheat (spring)	50	-	-		
Wheat (winter)	20	10	60		
Wild buckwheat	85	55	100		
Wild mustard	100	60	100		
Wild oat	60	30	60		
Windgrass	100	70	100		

TABLE D		COMPOUND				TABLE D	COMPOUND	
Rate 62 g/ha	1	22	46	51	52	Rate 31 g/ha	1	52
PREEMERGENCE						POSTEMERGENCE		
Alfalfa	-	-	-	-	-	Annual bluegras	50	20
Annual bluegras	60	20	90	100	100	Barley (winter)	10	10
Barley (winter)	20	0	2	90	50	Blackgrass	10	10
Blackgrass	50	30	60	80	80	Blk nightshade	-	60
Blk nightshade	90	10	50	95	40	Chickweed	-	50
Chickweed	85	40	70	90	80	Common poppy	100	100
Common poppy	100	60	100	100	-	Deadnettle	70	100
Deadnettle	65	0	90	80	70	Downy brome	10	20
Downy brome	50	0	70	80	40	Field violet	100	-
Field violet	70	-	100	65	-	Galium	60	50
Galium	100	20	60	100	-	Green foxtail	10	10
Green foxtail	100	10	100	100	80	I. Ryegrass	10	10
I. Ryegrass	40	0	60	90	70	Jointed goatgra	10	10
Jointed goatgra	20	0	60	90	40	Kochia	60	70
Kochia	100	10	60	80	80	Lambsquarters	60	80
Lambsquarters	70	60	70	70	90	LS canarygrass	10	10
Lentil	-	-	-	-	-	Rape	100	65
LS canarygrass	60	20	90	90	60	Redroot pigweed	70	60
Pea	-	-	-	-	-	Russian thistle	-	-
Potato	-	-	-	-	-	Scentless chamo	60	50
Rape	75	20	100	100	60	Spring Barley	10	10
Redroot pigweed	70	60	70	70	90	Spring Wheat	10	10
Russian thistle	100	-	30	70	85	Sugar beet	75	100
Scentless chamo	70	60	70	70	-	Sunflower	10	20
Sorghum	-	-	-	-	-	Wheat (winter)	10	10
Spring Barley	20	0	5	80	60	Wild buckwheat	0	50
Spring Wheat	0	0	10	70	70	Wild mustard	100	70
Sugar beet	100	30	100	100	100	Wild oat	20	10
Sunflower	35	20	30	40	0	Windgrass	20	10
Ivyleaf speedwe	100	-	100	100	-			
Wheat (spring)	10	-	-	-	-			
Wheat (winter)	10	0	2	55	60			
Wild buckwheat	80	0	40	90	60			
Wild mustard	100	30	100	100	90			
Wild oat	60	0	70	95	50			
Windgrass	100	20	100	100	100			

TABLE D	COMPOUND			
Rate 31 g/ha	1	46	51	52
PREEMERGENCE				
Alfalfa	-	-	-	-
Annual bluegras	75	60	85	50
Barley (winter)	10	50	50	50
Blackgrass	30	10	60	50
Blk nightshade	55	50	100	10
Chickweed	55	70	80	30
Common poppy	80	100	100	-
Deadnettle	60	90	80	50
Downy brome	30	70	80	30
Field violet	20	85	65	-
Galium	20	60	100	-
Green foxtail	60	80	100	50
I. Ryegrass	10	60	60	30
Jointed goatgra	10	50	60	30
Kochia	40	60	85	50
Lambsquarters	10	65	70	90
Lentil	-	-	-	-
LS canarygrass	20	70	80	30
Pea	-	-	-	-
Potato	-	-	-	-
Rape	30	50	100	50
Redroot pigweed	75	70	70	90
Russian thistle	10	30	60	30
Scentless chamo	30	65	65	-
Sorghum	-	-	-	-
Spring Barley	10	30	70	50
Spring Wheat	0	30	60	60
Sugar beet	30	70	100	100
Sunflower	10	10	40	0
Ivyleaf speedwe	50	100	100	-
Wheat (spring)	10	-	-	-
Wheat (winter)	10	40	30	50
Wild buckwheat	40	40	90	40
Wild mustard	60	90	100	90
Wild oat	20	50	80	40
Windgrass	60	40	100	80

TABLE D	COMPOUND	
Rate 16 g/ha	1	52
POSTEMERGENCE		
Annual bluegras	20	10
Barley (winter)	5	10
Blackgrass	10	10
Blk nightshade	60	55
Chickweed	80	30
Common poppy	50	60
Deadnettle	85	45
Downy brome	2	10
Field violet	20	-
Galium	0	40
Green foxtail	5	10
I. Ryegrass	5	5
Jointed goatgra	5	10
Kochia	0	70
Lambsquarters	0	70
LS canarygrass	10	10
Rape	65	65
Redroot pigweed	0	45
Russian thistle	40	-
Scentless chamo	30	30
Spring Barley	5	10
Spring Wheat	5	10
Sugar beet	45	100
Sunflower	5	40
Wheat (winter)	5	10
Wild buckwheat	0	60
Wild mustard	85	60
Wild oat	5	10
Windgrass	5	10

TEST E

Seeds, tubers, or plant parts of alexandergrass (*Brachiaria plantaginea*), annual bluegrass (*Poa annua*), arrowleaf sida (*Sida rhombifolia*), barnyardgrass (*Echinochloa crus-galli*), bermudagrass (*Cynodon dactylon*), citrus (*Citrus sinensis*), common chickweed (*Stellaria media*), common purslane (*Portulaca oleracea*), common ragweed (*Ambrosia elatior*), common groundsel (*Senecio vulgaris*), dallisgrass (*Paspalum dilatatum*), goosegrass (*Eleusine indica*), green foxtail (*Setaria viridis*), guineagrass (*Panicum maximum*), itchgrass (*Rottboellia exaltata*), johnson grass (*Sorghum halepense*), kochia (*Kochia scoparia*), large crabgrass (*Digitaria sanguinalis*), leafy spurge (*Euphorbia esula*), pitted morningglory (*Ipomoea lacunosa*), purple nutsedge (*Cyperus rotundus*), quackgrass (*Agropyron repens*),

Russian thistle (*Salsola kali*), sandbur (*Cenchrus echinatus*), sourgrass (*Trichachne insularis*), Spanishneedles (*Bidens bipinnata*), sugarcane (*Saccharum officinarum*), surinam grass (*Brachiaria decumbens*) and tall mallow (*Malva sylvestris*) were planted into greenhouse pots of flats containing greenhouse planting medium. Plant species were grown grown in separate pots or individual compartments. Preemergence applications were made within one day of planting the seed or plant part. Postemergence applications were applied when the plants were in the two to four leaf stage (three to twenty cm).

Test chemicals were formulated in a non-phytotoxic solvent mixture which included a surfactant and applied preemergence to the soil surface, postemergence to the plants or as a post directed spray to plants and soil at the base of the target species. Untreated control plants and treated plants were placed in the greenhouse and visually evaluated for injury 13 to 21 days after herbicide application. Plant response ratings, summarized in Table E, are based on a 0 to 100 scale where 0 is no injury and 100 is complete control. A dash (-) response means no test result.

TABLE E	COMPOUND
Rate 500 g/ha	2
PREEMERGENCE	
A. bluegrass	-
Alexandergrass	100
Arrowleaf sida	-
B. signalgrass	-
Barnyardgrass	-
Bermudagrass	100
Com. purslane	100
Com. ragweed	100
Com. chickweed	-
Com. groundsel	100
Dallisgrass	100
Goosegrass	100
Green foxtail	-
Guineagrass	-
Itchgrass	100
Johnsongrass	100
Kochia	-
Large crabgrass	100
Leafy spurge	-
P. morninglory	100
Purple nutsedge	0
Quackgrass	-
Russian Thistle	-
Sandbur	100
Sourgrass	100
Spanishneedles	100
Sugarcane	-
Surinam grass	100
Tall Mallow	100

TABLE E	COMPOUND
Rate 500 g/ha	2
POSTEMERGENCE	
Alexandergrass	95
Bermudagrass	75
Com. purslane	70
Com. ragweed	75
Com. groundsel	75
Dallisgrass	95
Goosegrass	95
Guineagrass	90
Itchgrass	95
Johnsongrass	95
Large crabgrass	90
P. morninglory	90
Purple nutsedge	0
Sandbur	80
Sourgrass	80
Spanishneedles	70
Sugarcane	25
Surinam grass	80
Tall Mallow	100

TABLE E	COMPOUND						
Rate 250 g/ha	1	2	9	15	23	44	52
POSTEMERGENCE							
Alexandergrass	90	80	10	20	80	10	75
Bermudagrass	30	50	10	20	10	0	35
Com. purslane	40	70	80	80	50	70	75
Com. ragweed	70	75	10	10	40	20	80
Com. groundsel	75	40	30	20	40	10	100
Dallisgrass	90	90	20	50	40	10	75
Goosegrass	70	90	10	30	75	20	75
Guineagrass	70	50	35	40	75	85	85
Itchgrass	85	90	30	85	80	10	40
Johnsongrass	90	80	85	100	65	10	20
Large crabgrass	85	80	10	40	40	10	80
P. morninglory	80	90	50	5	40	40	80
Purple nutsedge	0	0	0	0	0	0	50
Sandbur	10	50	0	0	20	0	60
Sourgrass	30	40	30	25	30	20	50
Spanishneedles	10	-	15	10	10	10	60
Sugarcane	-	25	-	-	-	-	-
Surinam grass	30	70	10	40	-	-	75
Tall Mallow	90	100	90	98	90	90	75

TABLE E	COMPOUND				
Rate 125 g/ha	2	9	15	44	52
POSTEMERGENCE					
Alexandergrass	30	10	10	10	10
Bermudagrass	35	10	20	0	35
Com. purslane	65	80	75	70	50
Com. ragweed	75	10	5	10	50
Com. groundsel	20	25	0	10	100
Dallisgrass	70	10	5	10	5
Goosegrass	-	5	20	10	5
Guineagrass	50	35	20	85	80
Itchgrass	75	30	80	5	35
Johnsongrass	60	85	98	5	35
Large crabgrass	75	5	10	10	5
P. morninglory	80	40	5	30	80
Purple nutsedge	0	0	0	0	40
Sandbur	10	0	0	0	5
Sourgrass	20	10	20	10	10
Spanishneedles	40	10	5	10	65
Sugarcane	20	-	-	-	-
Surinam grass	50	10	35	-	75
Tall Mallow	100	90	85	85	90

TABLE E	COMPOUND								
Rate 250 g/ha	1	2	9	15	23	42	44	46	67
PREEMERGENCE									
A. bluegrass	-	100	-	100	-	-	-	-	-
Alexandergrass	100	100	100	100	98	90	50	60	95
Arrowleaf sida	-	100	-	100	-	-	-	-	-
B. signalgrass	-	100	-	98	-	-	-	-	-

Barnyardgrass	-	100	-	75	-	-	-	-	-	
Bermudagrass	100	100	100	98	98	98	100	100	100	
Com. purslane	100	100	100	100	100	100	100	100	100	
Com. ragweed	100	100	100	100	100	90	100	100	100	
Com. chickweed	-	100	-	100	-	-	-	-	-	
Com. groundsel	100	100	100	100	100	100	100	100	100	
Dallisgrass	100	100	100	100	100	100	100	100	100	
Goosegrass	100	100	100	100	100	100	100	100	100	
Green foxtail	-	100	-	100	-	-	-	-	-	
Guineagrass	100	100	100	100	100	100	100	98	100	
Itchgrass	95	95	100	80	70	70	40	40	80	
Johnsongrass	100	100	90	100	90	95	75	0	80	
Kochia	-	-	-	100	-	-	-	-	-	
Large crabgrass	100	100	100	100	100	100	60	100	100	
Leafy spurge	-	100	-	98	-	-	-	-	-	
P. morninglory	100	100	100	90	80	75	50	65	90	
Purple nutsedge	50	0	0	0	0	30	0	0	10	
Quackgrass	-	100	-	95	-	-	-	-	-	
Russian Thistle	-	-	-	95	-	-	-	-	-	
Sandbur	100	100	20	100	98	70	80	30	75	
Sourgrass	100	100	100	100	100	100	100	100	100	
Spanishneedles	100	100	60	100	100	90	98	90	50	
Sugarcane	-	-	-	10	-	-	-	-	-	
Surinam grass	100	100	100	100	-	100	-	55	100	
Tall Mallow	100	100	100	98	90	100	98	100	98	

TABLE E	COMPOUND									
Rate 125 g/ha	1	2	9	15	23	42	44	46	52	67
PREEMERGENCE										
A. bluegrass	100	100	-	100	-	-	-	-	-	-
Alexandergrass	90	100	65	100	85	90	40	60	75	70
Arrowleaf sida	100	100	-	100	-	-	-	-	-	-
B. signalgrass	100	100	-	95	-	-	-	-	-	-
Barnyardgrass	80	100	-	40	-	-	-	-	-	-
Bermudagrass	100	100	100	98	98	98	98	100	100	90
Com. purslane	100	100	100	100	100	100	100	100	100	100
Com. ragweed	100	100	98	98	100	90	98	98	100	100
Com. chickweed	100	100	-	98	-	-	-	-	-	-
Com. groundsel	100	100	100	100	100	100	100	100	100	95
Dallisgrass	100	100	100	100	90	100	90	100	90	80
Goosegrass	100	100	100	98	98	100	98	98	100	100
Green foxtail	100	100	-	100	-	-	-	-	-	-
Guineagrass	100	100	90	100	98	100	100	100	100	100
Itchgrass	50	75	100	60	70	80	30	40	80	65
Johnsongrass	90	85	85	90	80	90	60	0	75	50
Kochia	100	-	-	95	-	-	-	-	-	-
Large crabgrass	100	100	100	100	100	100	70	100	100	98
Leafy spurge	100	100	-	-	-	-	-	-	-	-
P. morninglory	100	100	75	75	50	65	50	65	100	90
Purple nutsedge	0	0	0	0	0	30	0	0	50	5
Quackgrass	100	100	-	95	-	-	-	-	-	-
Russian Thistle	-	-	-	95	-	-	-	-	-	-
Sandbur	95	90	10	50	80	70	70	10	50	65
Sourgrass	100	100	100	100	100	100	100	100	100	100

Spanishneedles	90	100	30	98	100	100	70	90	35	50
Sugarcane	-	-	-	10	-	-	-	-	-	-
Surinam grass	98	100	20	100	-	100	-	40	80	75
Tall Mallow	100	100	100	100	85	98	98	100	100	90

TABLE E	COMPOUND
Rate 64 g/ha	2
POSTEMERGENCE	
Alexandergrass	30
Bermudagrass	20
Com. purslane	65
Com. ragweed	-
Com. groundsel	20
Dallisgrass	40
Goosegrass	75
Guineagrass	-
Itchgrass	40
Johnsongrass	60
Large crabgrass	35
P. morninglory	80
Purple nutsedge	0
Sandbur	10
Sourgrass	20
Spanishneedles	60
Sugarcane	20
Surinam grass	50
Tall Mallow	95

TABLE E	COMPOUND
Rate 32 g/ha	2
POSTEMERGENCE	
Alexandergrass	20
Bermudagrass	10
Com. purslane	65
Com. ragweed	50
Com. groundsel	0
Dallisgrass	10
Goosegrass	60
Guineagrass	5
Itchgrass	40
Johnsongrass	10
Large crabgrass	35
P. morninglory	80
Purple nutsedge	0
Sandbur	0
Sourgrass	10
Spanishneedles	60
Sugarcane	20
Surinam grass	35
Tall Mallow	98

TABLE E	COMPOUND									
Rate 64 g/ha	1	2	9	15	23	42	44	46	52	67
PREEMERGENCE										
A. bluegrass	100	100	-	100	-	-	-	-	-	-
Alexandergrass	75	90	65	80	0	40	40	0	75	40
Arrowleaf sida	98	100	-	50	-	-	-	-	-	-
B. signalgrass	90	100	-	60	-	-	-	-	-	-
Barnyardgrass	70	95	-	0	-	-	-	-	-	-
Bermudagrass	100	100	98	98	98	95	80	98	90	90
Com. purslane	100	100	100	100	100	100	100	100	100	100
Com. ragweed	100	100	100	100	70	75	85	98	80	95
Com. chickweed	95	100	-	85	-	-	-	-	-	-
Com. groundsel	100	100	100	98	100	100	100	100	98	50
Dallisgrass	100	100	100	100	85	95	80	98	80	70
Goosegrass	100	100	100	98	98	100	98	90	100	90
Green foxtail	100	100	-	100	-	-	-	-	-	-
Guineagrass	100	50	85	100	98	95	80	85	80	100
Itchgrass	20	75	85	30	60	65	0	0	70	40
Johnsongrass	40	98	75	90	80	90	0	0	50	35
Kochia	100	-	-	75	-	-	-	-	-	-
Large crabgrass	100	100	100	100	98	90	60	98	100	95
Leafy spurge	95	98	-	65	-	-	-	-	-	-
P. morninglory	80	100	60	40	0	30	30	65	100	75
Purple nutsedge	0	0	0	0	0	30	0	0	30	5
Quackgrass	80	90	-	65	-	-	-	-	-	-
Russian Thistle	-	-	-	90	-	-	-	-	-	-

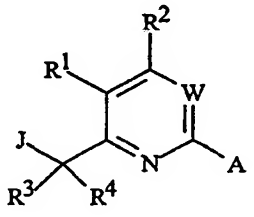
Sandbur	65	65	0	20	80	40	60	10	10	60
Sourgrass	100	100	100	100	98	100	100	100	100	100
Spanishneedles	80	100	20	30	70	20	60	85	20	0
Sugarcane	-	0	-	0	-	-	-	-	-	-
Surinam grass	35	90	10	20	-	50	-	0	70	75
Tall Mallow	100	100	100	100	85	98	80	100	98	90

TABLE E	COMPOUND									
Rate 32 g/ha	1	2	9	15	23	42	44	46	52	67
PREEMERGENCE										
A. bluegrass	90	80	-	100	-	-	-	-	-	-
Alexandergrass	10	50	30	75	0	20	0	0	20	25
Arrowleaf sida	98	98	-	65	-	-	-	-	-	-
B. signalgrass	20	65	-	35	-	-	-	-	-	-
Barnyardgrass	5	20	-	0	-	-	-	-	-	-
Bermudagrass	100	98	70	98	90	90	30	70	70	70
Com. purslane	98	100	100	100	100	100	80	100	100	80
Com. ragweed	90	100	10	100	50	50	40	0	35	90
Com. chickweed	30	100	-	65	-	-	-	-	-	-
Com. groundsel	98	100	98	100	100	90	98	100	35	0
Dallisgrass	98	90	85	95	80	70	65	65	35	40
Goosegrass	100	95	90	98	98	98	98	85	20	80
Green foxtail	100	90	-	100	-	-	-	-	-	-
Guineagrass	90	50	20	90	80	95	20	60	60	80
Itchgrass	20	70	100	10	30	35	0	0	35	40
Johnsongrass	5	65	55	60	70	10	30	0	-	35
Kochia	95	-	-	60	-	-	-	-	-	-
Large crabgrass	100	98	70	98	98	50	0	90	98	90
Leafy spurge	75	60	-	35	-	-	-	-	-	-
P. morninglory	70	100	45	5	0	-	20	65	50	60
Purple nutsedge	0	0	0	0	0	20	0	0	5	0
Quackgrass	65	20	-	65	-	-	-	-	-	-
Russian Thistle	-	-	-	70	-	-	-	-	-	-
Sandbur	20	20	0	10	85	0	0	0	0	60
Sourgrass	100	100	85	100	98	100	80	98	95	98
Spanishneedles	40	80	0	50	60	20	20	65	20	0
Sugarcane	-	-	-	0	-	-	-	-	-	-
Surinam grass	65	50	0	20	-	40	-	0	30	35
Tall Mallow	100	98	100	98	80	98	80	100	60	80

CLAIMS

What is claimed is:

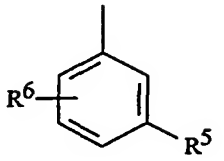
1. A compound selected from Formula I, geometric or stereoisomers thereof, *N*-oxides thereof and agriculturally suitable salts thereof,



I

wherein

J is



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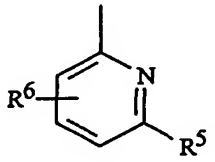

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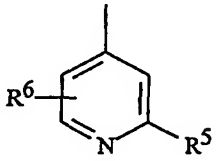

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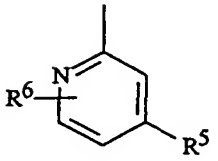

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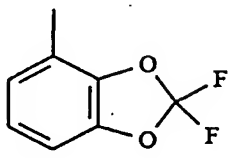

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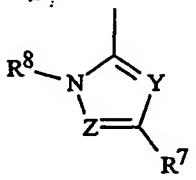

J-6

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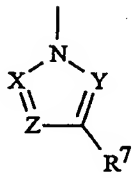
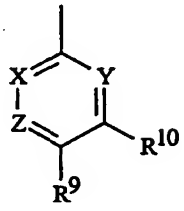


J-7

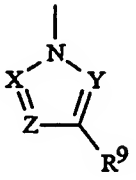
;

A is



A-1

or



A-2

;

W is N or CR^{11};

X, Y and Z are independently N or CR^{12};

R^1 and R^2 are independently H, halogen, cyano, C_1-C_4 alkoxy, C_1-C_4 haloalkoxy, C_2-C_4 alkoxyalkyl, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_2-C_4 alkoxyalkyl, C_2-C_4 alkenyl, C_2-C_4 alkynyl, C_3-C_4 alkenyloxy, C_3-C_4 alkynyloxy, $S(O)_nR^{13}$, C_2-C_4 alkylthioalkyl, C_2-C_4 alkylsulfonylalkyl, C_1-C_4 alkylamino or C_2-C_4 dialkylamino;

R^3 is H, F, Cl, Br, cyano, C_1-C_4 alkyl, C_1-C_4 haloalkyl or CO_2R^{14};

R^4 is H, F, C_1-C_4 alkyl, OH or OR^{14};

R^3 and R^4 can be taken together with the carbon to which they are attached to form C(=O) or $C(=NOR^{14})$;

R^5 is halogen, cyano, SF_5, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy, C_1-C_4 haloalkoxy or $S(O)_nR^{13}$;

R^6 and R^{10} are independently H, halogen, cyano, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy, C_1-C_4 haloalkoxy or $S(O)_nR^{13}$;

R^7 is halogen, cyano, SF_5, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy, C_1-C_4 haloalkoxy or $S(O)_nR^{13}$;

R^8 is C_1-C_4 alkyl or C_1-C_4 haloalkyl;

R^9 is H, halogen, cyano, SF_5, C_1-C_4 alkoxy, C_1-C_4 haloalkoxy, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_2-C_4 alkenyl, C_2-C_4 alkynyl, C_3-C_4 alkenyloxy, C_3-C_4 alkynyloxy or $S(O)_nR^{13}$;

R^{11} is H, halogen, cyano, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy, C_1-C_4 haloalkoxy or $S(O)_nR^{13}$;

R^{12} is H, halogen, cyano, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy, C_1-C_4 haloalkoxy or $S(O)_nR^{13}$;

each R^{13} is independently C_1-C_4 alkyl or C_1-C_4 haloalkyl;

each R^{14} is independently C_1-C_4 alkyl; and

each n is independently 0, 1 or 2.

2. A compound of Claim 1 wherein

R^1 and R^2 are independently H, C_1-C_4 alkyl or C_1-C_4 alkoxy;

R^5 and R^7 are independently halogen, C_1-C_4 haloalkyl, C_1-C_4 haloalkoxy or $S(O)_nR^{13}$;

R^6 is H or F;

R^8 is C_1-C_4 alkyl;

R^9 is halogen, cyano, C_1-C_4 alkoxy, C_1-C_4 haloalkoxy, C_1-C_4 alkyl, C_1-C_4 haloalkyl or $S(O)_nR^{13}$;

R^{10} is H, halogen, cyano or C_1-C_4 haloalkyl;

R^{11} is H, halogen, cyano or C_1-C_4 haloalkyl;

R^{12} is H, halogen, cyano or C_1-C_4 haloalkyl; and

n is 0.

3. A compound of Claim 2 wherein
W is N;
R^5 and R^7 are independently C_1-C_4 haloalkyl or C_1-C_4 haloalkoxy; and
R^9 is halogen, C_1-C_4 haloalkoxy, C_1-C_4 haloalkyl or $S(O)_nR^{13}$.

4. A compounds of Claim 3 wherein
R^1 is C_1-C_4 alkyl or C_1-C_4 alkoxy;
R^2 is H;
R3 and R4 are independently H, F or methyl;
R^5 and R^7 are independently C_1-C_2 haloalkyl or C_1-C_2 haloalkoxy; and
R^9 is C_1-C_2 haloalkoxy, C_1-C_2 haloalkyl or $S(O)_nR^{13}$.

5. A compound of Claim 4 wherein
J is J-1, J-5 or J-7.

6. A compound of Claim 3 wherein
R^3 and R^4 can be taken together with the carbon to which they are attached to form C(=O).

7. A compound of Claim 6 wherein
R^1 is C_1-C_4 alkyl or C_1-C_4 alkoxy;
R^2 is H;
R^5 and R^7 are independently C_1-C_2 haloalkyl or C_1-C_2 haloalkoxy; and
R^9 is C_1-C_2 haloalkoxy, C_1-C_2 haloalkyl or $S(O)_nR^{13}$.

8. A compound of Claim 7 wherein
J is J-1 or J-5.

9. The compound of Claim 1 selected from the group consisting of:
(a) 5-ethyl-4-[[3-(trifluoromethoxy)phenyl]methyl]-2-[3-(trifluoromethyl)-1*H*-pyrazol-1-yl]pyrimidine;
(b) 5-ethyl-4-[[3-(trifluoromethyl)phenyl]methyl]-2-[3-(trifluoromethyl)-1*H*-pyrazol-1-yl]pyrimidine;
(c) 5-methyl-2-[4-(trifluoromethyl)phenyl]-4-[[3-(trifluoromethyl)phenyl]methyl]pyrimidine;
(d) 5-methyl-4-[[3-(trifluoromethoxy)phenyl]methyl]-2-[4-(trifluoromethyl)phenyl]pyrimidine;
(e) 5-methyl-4-[[3-(trifluoromethoxy)phenyl]methyl]-2-[3-(trifluoromethyl)-1*H*-pyrazol-1-yl]pyrimidine;
(f) [5-methyl-2-[4-(trifluoromethyl)phenyl]-4-pyrimidinyl][3-(trifluoromethyl)phenyl]methanone;
(g) [5-methyl-2-[3-(trifluoromethyl)-1*H*-pyrazol-1-yl]-4-pyrimidinyl][3-(trifluoromethyl)phenyl]methanone; and

(h) 5-methyl-4-[[3-(trifluoromethyl)phenyl]-2-[3-(trifluoromethyl)-1*H*-pyrazol-1-yl]pyrimidine.

10. A herbicidal composition comprising a herbicidally effective amount of a compound of Claim 1 and at least one of a surfactant, a solid diluent or a liquid diluent.

11. A method for controlling the growth of undesired vegetation comprising contacting the vegetation or its environment with a herbicidally effective amount of a compound of Claim 1.

INTERNATIONAL SEARCH REPORT

Int tional Application No
PCT/US 98/22088

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 C07D239/26 C07D213/50 C07D403/04 C07D401/04 C07D401/06
C07D401/14 C07D405/06 C07D403/06 C07D403/14 A01N43/54

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classdication system followed by classification symbols)
IPC 6 C07D A01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CHEMICAL ABSTRACTS, vol. 119, no. 5, 1993 Columbus, Ohio, US; abstract no. 264649p, page 331; XP002091616 see abstract & JP 05 213878 A (NIPPON SODA) 24 August 1993 ---	1,2,10, 11
X	EP 0 459 662 A (I.C.I.) 4 December 1991 see the whole document -----	1,10,11

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
29 January 1999	15/02/1999

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Francois, J

1

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

Int. ional Application No
PCT/US 98/22088

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